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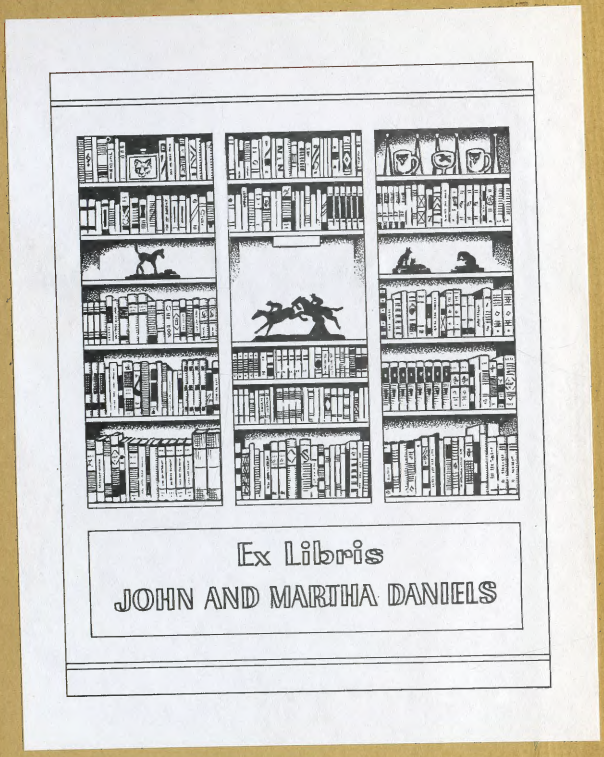

K. R. Davis

To John

from Charlie Peck

K. R. Davis

THE BOYS' OWN BOOK

—OF—

OUTDOOR SPORTS.

A HEALTHY MANUAL FOR LOVERS OF THE

Rod and Gun and the Gymnasium.

ANGLING, HUNTING AND TRAPPING DEVICES — BASEBALL, CRICKET, RUNNING, LEAPING, SWIMMING, WRESTLING, ETC., TAUGHT IN EASY LESSONS.

A Breezy, Outdoor Book of Athletics.

By UNCLE JOHN.

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THE

HUNTER'S AND TRAPPER'S

COMPLETE GUIDE.

About Guns.

An ordinary fowling-piece is made of metal and wood. The barrel, lock, and mounting are of metal; the stock of wood. The interior of the barrel is called the bore, the front end the muzzle, and the back end the breech. The old flint locks are now altogether out of use; percussion or detonating locks only are employed.

Butt of Stock.—The extremity of the stock, placed on the shoulder in taking aim and firing.

Chain, or Swivel.—A small chain connected with the tumbler and the mainspring.

Chamber.—A cavity in the breech, which receives the powder.

Cock, or Striker.

Guard.—Bar which protects the trigger.

Heel-plate.—The plate which guards the butt of the stock.

Lock-plate.—Supporting the principal works of the lock.

Mainspring.—That which governs the tumbler and the cock.

Scear.—That which catches the tumbler for half or whole cock.

Tumbler.—Movable centre piece of the trigger.

Worm.—Screw at the end of the ramrod.

How to Select a Gun.

A twisted barrel enhances the value of a gun, as it is never known to burst with ordinary use.

The length of a sporting gun should never exceed thirty inches,

for this will kill at sixty yards certain, and the average distance that game is shot is from twenty to twenty-five yards. The most useful gauge is No. 14, for though narrower might do for partridges and small birds, and wider for others, this bore will take an average charge, and, if a good gun, will kill at any ordinary distance.

The stock of the gun should be exactly fitted to the shape of the shooter. On putting a gun to the shoulder, there should be no straining of the neck, to take aim. When the eye is fixed upon a distant point and the gun raised to the shoulder, the object aimed at, the sight at the muzzle, the centre of the breech, and the eye should all be in a direct line without further adjustment. To ascertain whether or not the shape of the stock is that best adapted for the shooter, he should in this manner frequently raise the gun to his shoulder, and take aim at a distant point with both eyes open; then, closing the left eye, he will perceive whether or not he has mechanically taken a correct aim. If, with the left eye closed, he does not see the object, the stock is too crooked; if he sees all the rib, it is too straight; and if his line of arm is not along the centre of the breech, but from the left corner of it, the stock is not properly cast off. Should the line of aim be along the right side of the breech, the stock is too much thrown off. With a gun properly fitting, the aim is instantaneous; and the sportsman, if not naturally a good shot, is greatly assisted in the field. A gun of the proper shape may be chosen among others very easily by the above simple means of ascertaining that it carries a correct aim to a given object with both eyes open; and with such a gun, the shooter will acquire a practical dexterity in the field otherwise quite unattainable. When a stock is too much bent, the muzzle is depressed, and it is therefore preferable to have the stock rather straight; and it is a safe rule that in looking along the rib you distinctly see one-third of the whole length next the muzzle, as well as the sight. This gives the shot elevation and increases the range. The wood of the stock should be hard and tough; wild cherry is the best. The mounting and locks should be carefully fitted into the wood. In shape, the stock should be thin and well suited to the grasp, immediately behind the locks, where it is termed the handle. From that it should rapidly swell backwards, and acquire its greatest thickness im-

mediately behind where the butt succeeds to the handle. The fore-end of the stock should be broad and full, wide at the end of the lock plates, and may be chequered or not in the same manner as at the handle. The lock is an essential part of the gun; it should be as simple as possible in its construction, but filed in all its parts to perfection. The main-spring should be lively in action, and depend less upon quantity of metal for its strength, than upon width of expansion when released from its confinement, and great care in tempering. The tumbler and sear should be carefully bound down by the bridle, and be justly fitted to each other. To test a good lock, draw up the striker with the thumb, and observe that there is no grating or roughness—that it rises freely with decreasing power—and that it "speaks" well, with a clear sound at half and full cock. Draw the trigger, retaining the thumb upon the striker, and observe that it goes down freely, with increasing force, as it approaches the nipple. The trigger should be long and well curved, affording a good hold for the finger. The edges should be rounded, so as not to cut the finger in firing, and they should be set well separate. For nervous persons who have any hesitation, under the excitement of shooting, in choosing the proper trigger, the right-hand one may be chequered, thus giving a distinguishing mark. The guard of the trigger, termed the bow, should be rounded and somewhat thick at the edges, and have no improper projection likely to injure the middle finger in firing.

Breech Loaders.

The most marked improvement in the construction of fire-arms for sporting purposes, is that known as the *breech-loading gun*. The advantages of this invention are the extreme facility, quickness, and great additional safety in loading, the increased rapidity or sharpness and strength of shooting, absence of foulness, recoil, and less liability to be affected by wet or damp. The rapidity of loading may be imagined, when twelve shots can be fired in a minute; and no foulness accumulates—the remains of the burnt powder being driven through the barrel with every succeeding shot, as the thick elastic wad which fits in the breech end is two sizes larger than the muzzle; and, consequently, after the thousandth round the barrels are as clean and free from lead as

they were after the first discharge. In using the breech-loading gun, place the stock under the arm, and with the right hand pull the lever back, and ease down the barrels with the left hand. Take out the exploded cartridges with the thumb, or should they be rather tight (which is rarely the case,) tap the pin with a loaded cartridge, or draw them out with the small instrument made expressly for the purpose. When loading, pour the powder and shot into a basin. Use the small brass measures, and first put in a measure of powder, then a felt wadding, next the shot, and card wadding, and turn the end of the paper over, to secure the wadding, with a screw-press socket. For cleaning, on returning from shooting, wipe out the barrels with dry tow, then grease them slightly with an oiled rag, taking care not to bruise the breech end of the barrels by placing them on stones, as the nicety of fitting may be destroyed. The barrels need not be taken off the stock in cleaning. For safety, quickness, cleanliness, and execution, no gun can compare with the breech-loader.

How to Load a Gun.

All general rules on the subject must be laid down with several qualifications and reservations. Hold the gun upright, and in that position pour in the powder, striking the butt-end of the piece against the ground, to carry down such grains of powder as may be lodged against the sides of the barrel and also to settle the mass. Next, pass the powder-wad down until it reaches the powder, on which it ought to be pressed as tightly as possible. This done, pour down the shot, and give a shake or two to settle them evenly and solidly in their bed. Place over them wadding of sufficient substance and elasticity to maintain the shot steadily in their position, for which purpose, give a pressure to the wad, but do not ram it hard. The first charge, however, may be pressed a little harder than the subsequent ones. It may be proper when the powder is wadded, to observe whether it makes its way into the nipple by the pressure of the confined air, made in passing down the wad. It does not always follow, that if the powder is not seen on the pivot, it will not explode; it is, nevertheless, more satisfactory to see it there; and when it cannot be seen, the breech should be slightly tipped, to introduce the powder further up to the touch-hole. The last act of gun-loading is that of put-

ting on a fresh cap, and letting the cock down very gently to fasten on the nipple. When a gun has been discharged, it is a good practice to load it immediately, while the barrel is still warm; for when allowed to cool, and moisture begins to settle on its inner surface, it catches some of the finer particles of the powder-charge, and either decomposes them there, or prevents them falling to the bottom; and in either case the detention diminishes the projectile force which is to act on the shot.

The Art of Gunning.

In order to obtain a complete mastery over the gun, the young beginner should proceed in something like the following order: Let the handling and shouldering of the gun be expertly acquired in its unloaded state, taking care to regard its height, length of arm, and inclination of shoulder of the pupil. This practice should be gone through for an hour or two at a time for some days, until complete familiarity with all the required movements is attained. He should be expert at raising or depressing his gun to every kind of level, and taking an aim at various objects. To hold the gun firmly to the shoulder is an important consideration. It is likewise recommended to place the left hand close, or nearly so, to the trigger, as this prevents, in a great measure, any danger from the bursting of the piece. To cultivate a steady and decisive mode of walking and standing, is very advantageous for successful shooting. Anything like trepidation and an indecisive gait are inimical to successful sport. A firm placing of the limbs greatly assists the arms in readily and gracefully elevating and presenting the gun. The gun should be carried barrel upwards, and sloped towards the left arm, the lock being clasped by the hand of that side, the fingers embracing the stock, which allows the arm, though supporting the gun, yet to do it with readiness and ease, and to be placed with facility within the grasp of the hand previous to the meditated elevation. In the act of cocking, the forefinger should quit the front of the trigger, and extending itself sloping forward through the guard, only feel the side of it with a gentle pressure. The body, by this action of throwing out the butt, combined with the step-out of the left leg in taking form, will be brought with its weight principally upon that limb; a position assumed as more immediately called for,

when the flight is nearly in a line from the gunner, or to the left, which will comprise four out of five of all the shots. Again, when the word *present!* is used either audibly or mentally, the following directions are given. Let the barrel at this moment, inclined over the left shoulder, be swept in a circle forwards with a smart motion, the forefinger of the right hand (moving as directed above) being as it were the centre of motion upon which the gun turns during the sweep; by which action, the butt should be raised nearly to its full height, and then bring it back with a sharp motion into its place within the shoulder; whilst at the same time, an increased grasp with the left hand, which till now has kept its hold very loosely, combines with that of the right hand upon the gripe of the stock to keep it firmly there. The direction of barrel to the mark, or what may be termed the line of level to be taken, in the first instance, is a little below what, as already drawn by the eye to the object, may be distinguished by the name of the line of sight. The latter should be firm and immovable, to which a precise adjustment of the line of level must be firmly made by an easy flexure of the upper part of the body altogether, but without any loosening or twisting of the butt from its firm hold within its shoulder; and on the instant that these two lines are brought into contact, bear direct upon the object. Before an object crossing, the aim should be full high for a bird rising up or flying away very low, and between the ears of hares and rabbits running; it should be straight away; all this in proportion to the distance; the shooter rarely erring by firing at the crossing bird when at forty yards, at least five or six inches before it. As the barrels of double guns usually shoot a little inwards at long distances, there is so far a preference in favor of the right barrel for an object crossing to the left, and *vice versa*. Till the pupil is fully master of these intricacies, he will find great assistance from the sight, which he should have precisely on the intended point when he fires; he will thus by degrees attain the art of killing game in good style, which is to fix his eyes upon the object, and fire the moment he has brought up the gun. The shooter should accustom himself not to take his gun from his arm till the bird is on the wing, and never to vary his eye from the very one it first fixed upon. Another good rule is, that as soon as the eye bears on the object to be fired at, pro-

vided that the muzzle of the gun does the same, then it is proper to fire; for when the eye dwells too long, the distance becomes increased, and th sight is impaired. To kill birds flying across either to the right or the left, allowance must be made by the shooter not only for the distance he is from them, but also for the strength of the birds and the velocity of their motion; thus, it must be taken into account that the flight of the partridge in November will be greatly accelerated to what it was two months before. It may also be mentioned that in a cross-shot to the right, the difficulty is very much increased if the right leg is first when the birds rise; the gun cannot then be brought but a very trifling way beyond a straight line to the right. When dogs point, or when game has been marked and expected to spring, the walk should be with short and easy steps; the body can then be easily turned upon the legs, as if on a pivot, and the range of the bird commanded even if it should fly quite round the sportsman. The science of aiming accurately, however, will be of little service, except the gun be held steady from all starting or flinching in the act of firing. Shooting in company has given rise to a code of laws for the government of sportsmen. All birds that cross should be considered as belonging to the gunner to whose side their heads are pointed, unless a previous understanding is come to, that either party may take an after-shot at a tailing bird. When single birds rise and go away fair from either party, it may be proper to have it previously understood that such should be taken alternately by each shoot

How to Take a Gun to Pieces.

These are the directions of a Practical man:—"Let down the cock.

"Cramp the mainspring sufficiently to remove it.

"Take off the bridle.

"Press scear against scear-spring, with the fore-finger and thumb of the left or right hand, according as the lock may be a left or a right side one; and having, with the fore-finger of the other hand, pushed back the cock as far as it will go, let the scear-spring go back gently, when the pivot of the scear is easily lifted out of the hole, and the scear taken out.

"Turn out the scear-spring screw and take out this spring.

"Unscrew and take off the cock.

"Take out the tumbler."

To put them together again:—

"Put in tumbler, and screw on cock so as to be let down.

"Put cock rather backwards, and screw on scear-spring.

"Push cock as far back as it will go; put pivot of scear into its proper hole; and then, taking hold of this scear with the thumb, and of the top of the cock with the fore-finger of the right hand, if a right hand lock (and *vice versa* if a left,) compress the spring, and move the cock forward and down.

"Push forward the swivel, so that it may not interfere with the screw, and drawing the cock a little forwards, slip the two holes in the bridle upon the heads of the screw and tumbler-pivot, and screw on the bridle.

"Having let down the cock and pulled forward the swivel as far as it will go, cramp the mainspring, hook the end of it in the swivel, move it up into its place on the lock-plate, and unscrew the cramp."

The Rifle, and How to Use It.

With Americans the Rifle is a great favorite. One of the first lessons should consist of the following practice at a target about eighteen inches in diameter, and at a distance of ten or twelve paces. Having put a small copper thimble, or percussion-cap, from which the composition has been removed, upon the nipple, the pupil should raise the rifle [previously cocked] steadily to his shoulder, and, while closing his left eye, look intently with the right along the first sight to the more distant one, the gaze being steadily fixed upon the mark, however, and not on the sight, and the muzzle being raised above the bull's-eye. The rifle should now be steadily lowered, and at the instant that the more distant sight covers the centre of the bull's-eye, the motion should be arrested, the centre of the heel-plate as above directed, firmly pressed against the muscle of the shoulder, and the trigger simultaneously pulled. All delay is bad when once the aim has been clearly got. After the cock has fallen on the nipple, the eye should still look, for the space of a second at least, as fixedly as before upon the target, noting carefully the deflection upon each occasion. Easy as this may appear, it will be found that to do it

without flinching requires some considerable practice. When that amount of proficiency is obtained, the same process should be repeated with caps, proceeding gradually to the use of a few grains of gun-powder, increasing the charge to two or three drachms. When the slightest terror is no longer felt at the critical moment of the explosion, a bullet, with a very small charge of powder may be ventured on. By degrees the shooter will find himself acquiring confidence, and having repeatedly struck the target at a dozen yards with half a drachm of powder, he will find the same feat practicable enough at twenty, fifty, and finally at a hundred yards, with one drachm, or one drachm and a half. Having proceeded so far, he will do well to continue working daily at the latter range for some weeks, until he can make certain of raising his rifle to the "present," and of striking the bull's-eye almost at the same moment. He may then progressively extend his distance by twenty or twenty-five yards at a time, till he has reached the extremest limits at which good shooting can be calculated upon. He may consider himself somewhat above an average shot, when at fifty yards he can make sure of obtaining twenty hits all within a circle of five inches in diameter; at a hundred yards within a circle of ten inches; at two hundred yards within a circle of twenty inches; and so on up to a thousand yards. As to that range, if the shooter can be certain of putting ten bullets in succession within eight feet in diameter, he will do as much as any one need hope to achieve. A very important matter to be kept in mind while practicing at the target is the charge of powder. It cannot be too strongly inculcated that, after careful trial, the proper charge for a particular rifle having been once determined upon, that charge ought never to be increased or diminished even by a grain. When the greatest possible accuracy is required in shooting, it is well worth while to weigh each charge in a delicate ballance, and subsequently to enclose it in a small dry glass or metal tube, carefully secureing it with a cork or stopper. If this process be deemed too tedious, a small brass charger should be used, slightly "hooped," each time that it is filled; it should then be tapped lightly at the bottom, so as to shake off the superfluous grains, leaving the measure exactly filled. Care should be taken that no extranous matters get mixed up with the powder, as every particle of the kind, however small, will diminish more or less the momentum

of the bullet, causing it to strike low, for besides displacing a certain bulk of powder, any matter of the kind prevents the due and regular ignition of the charge. It has frequently been remarked that, when using a loose charge, the best shooting was at the commencement of the practice, when the flask was full. This arises from the common habit of filling a flask when about three parts empty; the dust, smaller grains, &c., thus collect at the bottom, and the force of each later discharge is proportionably feebler. To avoid this, the stock of powder should be occasionally sifted through a lawn or silk sieve. Some riflemen attach much importance, at shooting-matches, to wiping out the barrel after every discharge. For this purpose the shooter is provided with a number of pieces of rag (the material preferred being cotton flannel,) each about two inches square; one of these being twisted round a rod kept for the purpose, is passed up and down the barrel after each shot, care being taken never to use the same rag twice until it has been thoroughly washed.

About Dogs.

The dog is said to be the companion of man. He takes an active interest in all that concerns his master. His sagacity is ever allied with fidelity; and we might well "go to the dogs" for many lessons of honesty, loyalty, and good faith. In field sports the dog is eminently useful; and it is more than curious, it is really wonderful, to what he can be trained. There are various sorts of sporting dogs, all very useful in their way; we must, however, confine ourselves to those used in shooting.

Management of Dogs.

The best way to keep a dog healthy is to let him have plenty of exercise, and not to overfeed him. Let them have at all times a plentiful supply of clean water, and encourage them to take to swimming, as it assists their cleanliness. When they are washed no soap should be used, as it prevents their licking themselves, and they may thus become habitually dirty. Properly treated, dogs should only be fed once a day. Meat boiled for dogs, and the liquor in which it is boiled, thickened with barley-meal or oatmeal, forms capital food. The distemper is liable to attack dogs from four months to four years old. It prevails most in

spring and autumn. The disease generally manifests itself by a dullness of the eye, husky cough, shivering, loss of appetite and energy, and occasional fits. During the prevalence of this complaint dogs should be allowed to run on the grass, their diet should be spare, and a little sulphur placed in their water. To administer medicine to a dog, place him, if of moderate size only, upright on his hind legs, between the knees of a seated person. Apply a napkin round his shoulders, bringing it forward over the fore legs, by which he is secured from resisting. The mouth being now forced open by the pressure of the fore-finger and thumb upon the lip of the upper jaw, the medicine can be conveniently introduced with the other hand, and passed sufficiently far into the throat to ensure its not being returned. The mouth should now be closed and kept so until the matter given is seen to pass down.

Training of Dogs.

A well trained dog is indispensable to success in gunning. We give full directions for the breaking him to his work. Taking the pointer to operate on as being more perfectly under the control of the sportsman than most other kind of dogs.

The first lesson inculcated is that of passive obedience, and this enforced by the infliction of severity as lenient as the case will admit. The dog is taken into a garden or field, and a strong cord about eighteen or twenty yards long is tied to his collar. The sportsman calls the dog to him, looks earnestly at him, gently presses him to the ground, and several times will make him *down* immediately, and take him to the place where the birds rose. Chide him with "Steady!" "How dare you?" Use no whip, but scold him well, and be assured that he will be more cautious. If possible, kill on the next chance. The moment the bird is down, the dog will probably rush in and seize it. He must be met with the same rebuff, "Down charge!" If he do not obey, he must receive a stroke of the whip. The gun being again charged, the bird is sought for, and the dog is allowed to see it and play with it for a minute before it is put in the bag. He will become thoroughly fond of the sport, and his fondness will increase with each bird that is killed. At every time, however, whether he kills or misses, the sportsman should make the dog

"Down charge!" and never allow him to rise until he has loaded. If a Rabbit should be wounded, there will, occasionally, be considerable difficulty in preventing him from chasing her. He must be checked with "'Ware chase," and if he does not attend, the sportsman must wait patiently. He will by-and-by come slinking along with his tail between his legs, conscious of his fault. It is one, however, that admits of no pardon. He must be secured, and while the field echoes with the cry of "'Ware chase," he must be punished to a certain but not to too great an extent. The castigation must be repeated as often as he offends; or, if there be much difficulty in breaking him of the habit, he must be got rid of. By attention to the rules here laid down, the person whose circumstances only permit him occasionally to shoot, may very readily educate his dog, without having recourse to keepers or professional breakers. Generally speaking. no dog is half so well broken as the one whose owner has taken the trouble of training him. The scholar being thus prepared should be taken into the field, either alone or with a well-trained steady dog. When the old dog makes a point, the master calls out "Down!" or "Soho!" and holds up his hand and approaches steadily towards the birds; and if the young one runs in, or prepares to do so, as probably he will at first, he again raises his hand and calls out "Soho!" If the youngster pays no attention to this, the whip must be used, and in a short time he will be steady enough at the first intimation of the game. If he springs any birds without taking any notice of them, he should be dragged to the spot from which they rose, and, "Soho!" being cried, one or two sharp strokes with the whip should be inflicted. If he is too eager, he should be warned to "Take heed." If he runs with his nose near the ground, he should be admonished to hold up, and if he still persists the muzzle-peg may be resorted to. The best plan to accustom dogs to the gun, is occasionally to fire off one while they are being fed. When the dog has grown tolerably steady, and is taught to come at the call, he should also learn to range and quarter his ground. Let some clear morning, and some place where the sportsman is likely to meet with game, be selected. Station him where the wind will blow in his face; wave your hand and cry "Heigh on, good dog!" Then let him go off to the right about seventy or eighty yards. After this, call

him by another wave of the hand, and let him go the same distance to the left. Walk straight forward with your eye always upon him; then let him continue to cross from right to left, calling him in at the limit of each range. In doing this, the same ground should never be twice passed over. The sportsman watches every motion, and the dog is never trusted out of sight or allowed to break fence. When this lesson is tolerably learned, he may, on some good scenting morning early in the season, take the field, and perhaps find. Probably he will be too eager, and spring upon his game. A loud but not an angry voice says, "Down!" or "Down charge!" The dog does not know the meaning of this, and struggles to get up; but as often as he struggles, the cry of "Down charge!" is repeated, and the pressure is continued or increased. This is continued a longer or shorter time, until the dog, finding that no harm is meant, quietly submits. He is then permitted to rise; he is patted and caressed, and some food is given him. The command to rise is also given in the terms "Heigh up!" A little while afterwards the same process is repeated, and the dog struggles less, or perhaps ceases to struggle altogether. The attachment of the dog should be gained by frequently feeding and caressing him, and giving occasional hours of liberty; but every now and then inculcating a lesson of obedience, teaching him that every gambol must be under the control of the master; frequently checking him in the midst of his gambols with the order of "Down charge!" patting him when he is promptly obedient; but scolding or moderately chastising him, when there is any reluctance to obey. The dog is then suffered to run over the field, seemingly at his pleasure, when suddenly comes the warning "Down!" He perhaps will pay no attention to it, until he is seized by his master, forced on the ground, and is menaced with the order of "Down!" somewhat sternly uttered. After a while he is suffered again to get up. He soon forgets what has occurred, and gallops away with as much glee as ever. Again the "Down!" is heard, and again little or no attention is paid to it. His master once more lays hold of him and forces him on the ground, and perhaps inflicts a slight blow or two, and this process continues until the dog finds that he must obey the command of "Down charge!" The owner should now walk from the dog a little way backward with his

hand lifted up. If the dog make the slightest motion, he must be sharply spoken to, and the order peremtorily enforced. He must then be taught to "Back," that is, to come behind his master when called. When he appears to understand all this, he is called by his master in a kindly tone, and patted and caressed.

Best Dogs for Shooters.

SETTER.

The highest place among shooting-dogs is by many sportsmen awarded to the setter. Says Craven: "In style and dash of ranging, in courage and capacity of covering ground, in beauty and grace of attitude, in variety of color and elegance of clothing, no animal of his species will at all bear comparison with him." This is high praise, and a little hard, in our opinion, on the pointer. The pointer is an excellent dog, but he is more delicate than the setter; still, as a set-off, he never lets his enthusiasm in sport get the better of his discretion, an *indiscretion* into which setters will sometimes be betrayed.

The setter has one marked advantage over the pointer, the hairy protection of its feet enabling it to go through an amount of work, without injury, that would dead beat the pointer. It is equalled by none in points of docility and personal attachment.

The setter is a capital dog for all sorts of ordinary sporting.

"I have tried all sorts," says a large breeder of sporting dogs, "and at last fixed upon a well-bred setter as the most useful.

For cover or snipe-shooting, the setter is far superior—facing the thorns in the cover and the water in the swamps without coming to heel, shivering like a pig in the ague. I have also found that setters, when well broken, are finer tempered, and not so easily cowed as pointers. I also find that after a good rough day the setter will out-tire the pointer, though, perhaps, not start quite so fresh in the morning."

POINTER.

The pointer, said by some to be of Spanish origin, is more nearly allied to the race of hounds than any other shooting-dog. They will, almost without education, or, in technical phraseology, with very little breaking, exhibit a strong tendency to the peculi-

arity of their race, and stand at game of every kind, and that even when they are puppies.

The pointer follows game by scent, and his peculiarity is that he will stand as if turned to stone, the moment he comes in contact with the slightest scent of game. But pointers are never considered complete unless they are perfectly staunch to bird, dog, and gun; which implies, first, standing singly to a bird or covey; secondly, to backing (or pointing instantaneously, likewise), the moment they perceive another dog stand; and lastly, not to stir from their point upon the firing of any gun in company, provided the game is neither sprung nor started at which the original point was made.

WATER DOGS.

The water-spaniel and the Newfoundland dog are of great use to the sportsman when bent on shooting water birds. As to the water-spaniel, docility and affection are stamped on his countenance, and he rivals every other breed in attachment to his master. His work is double; first, to find when ordered to do so, and to back behind the sportsman when the game will be more advantageously trodden up. In both he must be taught to be perfectly obedient to the voice, that he may be kept within range, and not necessarily disturb the birds. A more important part of his duty is to find and bring the game that has dropped. To teach him to find is easy enough, for a young water-spaniel will as readily take to the water as a pointer puppy will stop; but to bring home game without tearing is a more difficult lesson; and the most difficult of all is to make him suspend the pursuit of the wounded game while the sportsman reloads.

The Newfoundland dog is, in point of fact, only a spaniel of large growth. That which most recommends him is his fearlessness of water. "It is our opinion," says Craven, "that in most cases he might be made the most valuable of sporting dogs, his intelligence—or instinct, if such indeed it merely be—appearing to be called into action in a greater variety of instances than in any other dog, except the original mountain or shepherd dog. As a retriever, he possesses a quality of unquestionable value—that of mouthing his game without breaking it; and he may be brought into the field with pointers without interfering with their province."

THE RETRIEVER.

This useful dog is a cross between the spaniel and Newfoundland or Spaniel or Poodle. Their chief value consists in their fearlessness and perseverance in penetrating the thickest bush, or cover.

Hunting, Gunning, and Shooting.

RABBIT SHOOTING.

In approaching these wary animals, a degree of caution is necessary, so as not to disturb them. It is well, therefore, never to advance in a straight line, or even look directly towards them; walk leisurely along in the face of the wind; stoop and pick up, or appear to pick up, a bough or piece of turf, or to examine any matter before you, and such conduct will often throw them off their guard. While doing this, if a dog is with you, keep him close; your clothes, also, should be dark, so as not to be seen on the approach a long way off. When you have ventured as near as they will allow without retreating to their earth, then stoop. When storms arise, the intervals between are often favorable for getting near rabbits, particularly when the wind blows from them to you. When a number are come upon suddenly at the edge of a wood frequented by them, it often happens that the old ones will immediately take the covert; but not so the young ones, who prick up their ears, and perhaps raise themselves up to examine you; now take your shot.

SNIPE SHOOTING.

These are to be met with in low marshy grounds. In spring they disperse themselves to higher and more airy situations. Snipe-shooting affords excellent diversion; but those who attempt it should be possessed of a strong constitution, and considerable fortitude and energy: wet and dirt must not be cared for, nor must the coldness and severity of the weather be heeded. Snipes are difficult to hit when on the wing, owing to the irregular twistings of their flight; but this difficulty is soon surmounted if the birds are allowed to reach to a certain distance, when their flight becomes steady and easy to traverse with the gun; there is no reason to be apprehensive of their getting out of the range of the

shot, as they will fall to the ground if struck but slightly with the smallest grain. Snipes like many other birds always fly against the wind; therefore the sportsman by keeping the wind at his back, has this advantage of the bird when it rises, that it presents a fairer mark. In severe weather, snipes resort in numbers to warm springs, where the rills continue open and run with a gentle stream; these, on account of their long bills, are then the only places where they can hunt for food. Snipes lie better in windy weather than in any other, and as they then usually make a momentary halt or hanging on, that is the time to fire. When they cross, also, by firing well forward, they seldom escape. Snipes are among the most inconstant of birds; a frosty night will send away the whole of a flight that had been there the day before; and again in two days' time they may return, if open

weather and a dry wind succeed. A regular snipe locality should be tried not only every day, but twice a day, so uncertain are snipes in fixing themselves even for a day.

PARTRIDGE SHOOTING.

The best time for partridge shooting is in the morning early, or late in the afternoon. Always endeavor to get cross shots, this may usually be effected by walking across or heading your dog when pointing. If you go straight from him to the birds,

they will generally go straight away. Birds when flying across you, present a far easier shot, and expose a more vital part.

During the entire season, the wheat-stubbles and turnips are the best spots for holding partridges. In storms and fogs partridges lie very close, and in fine days which follow storms. Heavy rains cause them to lie extremely close in turnips; and therefore, as well as for other reasons it is not favorable for sport.

WOOD-COCK SHOOTING.

The shooting of the wood-cock requires more skill and experience than any other game. It is an uncertain bird, that requires careful treatment, but is worth all the trouble. A team of small spaniels is all that is needed in the way of dogs; nearly every thing depends on the trigger. When the cover is beaten, look out sharp for the cock, as your shot must depend very much on his humor, whether he is all alive or sluggish. Sometimes, for example, he won't stir till fairly beaten out of the cover, and then a shot will bring him down; sometimes he will be off and away almost before the cover has been touched.

When in places likely to hold a cock, towards evening try the mosses, banks of rivulets, and boggy bottoms; at that time the birds are on the "road," or feed, and, consequently, are more easily met with than when laid up in the snug harbor of some old osier-bed, or beneath the root of some monarch of the wood, in the deepest recesses of some wide cover. When flushed, bear in mind that the wood-cock seldom, if ever, pitches on feeding-ground.

WILD FOWL SHOOTING.

Care must be taken not to fire too soon, distance is very deceptive on water, and many good aims are made worthless through miscalculating the distance. The scent of the water fowl is exceedingly keen, and to get within range it is better to keep to the leeward of them, than to bear direct down upon them.

Ducks are hunted with decoys in the early spring and fall. Wild geese are shot from behind screens on the margins of lakes and rivers. The hunters decoy them by imitating their crys. Tame geese may also be used as decoys.

DEER HUNTING.

The best method for hunting Deer is by the "Still Hunt." This is done by finding fresh track of the deer and then with care and quietness following the trail till the deer is found. If care is exercised in approaching, a good shot can generally be obtained. The following directions are given by a practical hunter:

"For 'Still Hunting,' the hunter should provide himself with a good rifle and a pair of deer skin moccasins. When finding the trail he should walk carefully and keep a good lookout ahead as deer are always watching back on their trail. When routed, they almost always stop on hills. In order to get within gun shot, it is neceseary to circle round and come up to ward in front or at the side—always circling to the leeward side, as their sense of smell is very acute The deer, when the early snow comes usually get up and feed till about 10 o'clock, A. M., when they lie down till about 3 o'clock, P. M., when they start on a rambling excursion till near the next morning. In these excursions they almost always return to the place from whence they started, or near to it."

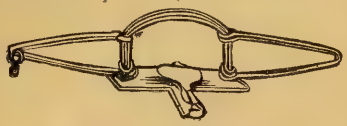
In "Still Hunting," when the buck, doe, and fawns are found together, shoot the doe first, the buck will not leave till you get another shot.

BUFFALO HUNTING.

Buffalo nunting is not unaccompanied with danger. When the head is disturbed, they at once flock together, into a compact mass, and rush through all obstacles. They should only be approached on the outskirts. The usual way of hunting the buffalo is on horse-back, as a person on foot cannot approach them without screening himself. An eight inch navy revolver is the best weapon, but a breech loading carbine or rifle is very good. Hunt up a drove feeding; approach them from the leeward side, or they will scent you and move off. The horse does not disturb them, therefore lie down on the horse and let him gradually work towards them; select a cow and approach her on the left side if you have a pistol, and right side if yon have a rifle. Shoot for the heart. The ball should be aimed just back of the fore leg, a few inches above the brisket.

Trapping

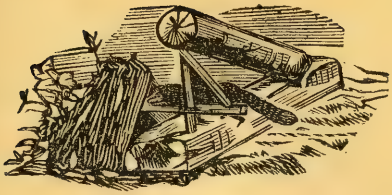
For regular trapping the steel trap is incomparably the best. They can be easily moved from place to place, and can be placed with equal facility either on land or under water with small danger of observation, and they do not injure the fur. The best steel traps made are called the Newhouse Traps. They are all thoroughly and scientifically made, and can always be relied upon. They can be procured at any hardware dealer. Eight different sizes of the Newhouse Trap are manufactured.



THE NEWHOUSE TRAP.

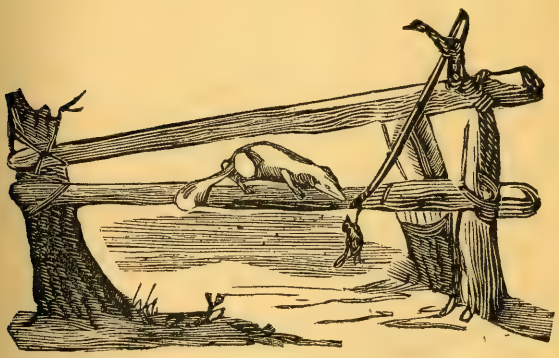
From No. 0 to No. 6: No. 0 is the smallest size, and is adapted for rats. No. 1 is called the Muskrat Trap, it has one spring, and the jaws spread 4 inches; it will serve for the capture of the mink, marten, and all the smaller fur bearing animals. No. 1½ is called the Mink Trap. It will do, also, for the fox, or fisher. No. 2 is called the Fox Trap; it has two springs, and the jaws spread 4⅞ inches. No. 3 is called the Otter Trap; it will hold any medium sized animal as the beaver, badger, oppossum, or wild cat. No. 4 is called the Beaver Trap; it is adapted for the wolf or lynx. No. 5 is the Male Bear Trap; it is adapted for the common black bear, panther and most other large animals found on this side of the Rocky Mountains. No. 6 is called the Great Bear Trap. This is the trap for the grizzly bear and the moose. It will take the largest animals known excepting the Elephant. The traps made by the trapper himself now come next in order. These chiefly consist of the Dead Fall and its variations.

It consists of two large poles or logs placed over each other and kept in place by four stakes, two on each side. The top pole is raised at one end sufficiently high to admit the entrance of the animal, and is kept in that position by the contrivance of the stick and spindle, or "figure four." A tight pen is made with sticks, brush, &c., on one side of the trap, at right angles to it, and the



DEAD FALL TRAP.

spindle projects obliquely into this pen so that the bait attached to it is about eight inches beyond the side of the poles. The animal, to reach this bait, has to place his body between the poles and at right angles to them, and on pulling, the spindle springs the "figure four" and is crushed. Another rude Dead Fall Trap is made like the following:

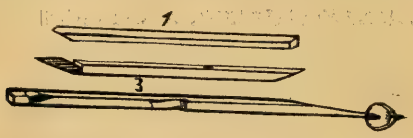


DEAD FALL TRAP NO. 2.

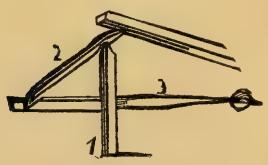
The animal in his effort to get the bait, throws off the fall outside of the post or stump on which it rests, catching the animal as it falls and crushes it.

This contrivance forms the basis of a large variety of traps. It is made of three sticks—an upright, a diagonal piece, and the trigger or horizontal piece. The upright piece should be made about eight inches long, the top end being cut to a thick edge—not pointed. The horizontal piece or trigger, about ten inches long and square—has a notch on one side about seven inches from one end. On the upper face of the trigger, about six and a half inches from the side notch, is another notch.

The diagonal piece has both ends bevelled or brought to a wide edge, and a notch cut near one end. In setting up the figure, hold the perpendicular up, fit the trigger to its side, then adjust the notch in the diagonal to the perpendicular, and then insert the other end of the diagonal in the notch near the end of the trigger. Now let the lid of the trap or the fall, rest on the end of the diagonal, right over the trap. This makes the figure four



THE PIECES OF "FIGURE FOUR" TRAP.



THE "FIGURE FOUR" IN POSITION.

stand firmly, yet ready to fall at the least pressure on the trigger, to which the bait is fastened. The trigger should extend about three inches from the perpendicular. Its construction can be easily seen from the wood cut.

Setting and Baiting Traps.

In trapping there are three points to be constantly borne in mind, viz: To set your trap so that the animals will go to it;

that it will secure him when he comes—and that your captive shall not release itself. In using the home made traps, the precautions will suggest themselves; steel traps must always be disguised with some preparation rubbed over them. The trap should be well smoked with hemlock, cedar, or juniper boughs, or immerse it in fresh hog's or chicken's blood. Melted fat, or bee's wax will also answer the same purpose. In setting traps for Rabbits, grease of all kinds must be avoided. Too much preparation must not be made around your traps—things must be left as natural as possible. Animals are usually very shy and are easily frightened off. In the case of Fox's, Raccoons, &c., it is better to induce to come for a few nights before setting the trap. Scatter around bones, pieces of meat, bread, corn, &c., it will lead him to be bold, and success will be more certain.

In trapping animals whose skins are valuable, precautions have to be taken to prevent them injuring their fur, or devouring themselves, or being devoured by other animals.

A contrivance called a Spring Pole, is used for this purpose, and is made as follows: Cut a pole of the required size, drive it firmly into the ground, bend it down from the top, and fasten the trap to it; fasten the bent pole by a notch or hook on a small tree or a stick driven into the ground.

If a small tree stands near, you can trim it and use as it stands. When the animal is caught, in his struggles he unhooks the pole which flys back and lifts him up into the air, and thus secures him from self-violence and from prowlers

Animals that live in the water require a different contrivance. Cut a pole ten or twelve feet long, leaving enough of the branches on the end to prevent the ring of the chain slipping off. Place the pole near your trap, in an inclined position, with its small end reaching into the deepest part of the stream, and its large end made fast at the bank by a hook driven into the ground. Slip the chain ring on the pole, and be sure that it is free to traverse the whole length. When the animal is caught, it plunges desperately into the region towards which the pole leads. The ring slides down to the end of the pole at the bottom of the stream, and with a short chain prevents the animal from coming to the surface or returning to the shore.

Proper Season for Trapping.

Newhouse, who is the best authority on these matters, makes the following remarks:

"All furs are best in winter; but trapping may be carried on to advantage for at least six months in the year, *i. e.*, any time between the first of October and the middle of April. There is a period in the warm season, say from the first of May to the middle of September, when trapping is out of the question, as furs are worthless. The most trapping is done late in the fall and early in the spring. The reason why furs become worthless in summer is, that all fur-bearing animals shed their coats, or at least lose the finest and thickest part of their fur as warm weather approaches, and have a new growth of it in the fall to protect them in winter. This whole process is indicated in the case of the muskrat, and some other animals, by the color of the inside part of the skin. As summer approaches, it becomes brown and dark. That is a sign that the best fur is gone. Afterward it grows light-colored, and in winter when the fur is in the best condition, it is altogether white. When the pelt is white, it is called *prime* by the fur-dealers. The fur is then *glossy*, *thick*, and of the *richest color*, and the tails of such animals as the mink, marten, and fisher, are full and heavy. Beavers and muskrats are not thoroughly prime till about the middle of winter. Other animals are prime about the first of November. There is probably some variation with the latitude, of the exact period at which furs become prime, the more northern being a little in advance. Trappers are liable to begin trapping too early in the season, consequently much poor fur is caught, which must be sold at low prices, and is unprofitable to the trapper, the fur-buyer, and the manufacturer."

Hints to Trappers.

The skins of animals trapped are always valued higher than those shot, as shot not only make holes, but frequently plow along the skin making furrows as well as shaving off the fur. To realize the utmost for skins they must be taken care of, and also cleaned and prepared properly. Newhouse gives these general rules derived from experience.

1. Be careful to visit your traps often enough, so that the skins will not have time to get tainted.

2. As soon as possible after an animal is dead and dry, attend to the skinning and curing.

3. Scrape off all superfluous flesh and fat, and be careful not to go so deep as to cut the fiber of the skin.

4. Never dry a skin by the fire or in the sun, but in a cool, shady place, sheltered from rain. If you use a barn door for a stretcher (as boys sometimes do), nail the skin on the *inside* of the door.

5. Never use "preparations" of any kind in curing skins, nor even wash them in water, but simply stretch and dry them as they are taken from the animal.

Specific Directions for Trapping and Snaring.

The Fox.—There are several methods of catching this cautious animal. The trap should be concealed in a bed of ashes, leaves, or chaff, taking care that the trap is well smeared with blood or bee's-wax. Fasten to a clog so that he can move about when caught. To make the allurement doubly sure, obtain from the female of the dog, fox or wolf, the matrix, in the season of coition, and preserve it in alcohol, tightly corked. Leave a small portion of it on something near the trap; also, when visiting the traps, put some on your boots.

Make a trail in different directions round the trap. A piece of raw flesh may also be dragged about. Be sure and leave everything around the trap and vicinity as natural as possible.

Another good plan is to get some earth from a kennel where a tame fox is kept. Set the trap in it.

The Mink.—These can be taken either on land or water, the land is generally preferred by trappers. The trap is set near the bank of a stream. If one of their holes cannot be found, make one. Three sides of the cavity should be barricaded with stone, bark or wood, and the trap set in the entrance. For bait, use fish, bird, or muskrat, cut in small pieces and placed in the hole beyond the trap so that the mink will be obliged to step over the trap to get it. Cover the trap with leaves, grass, or feathers. In the coldest weather, smoke the bait to give it a stronger scent. The best scent for attracting mink is made as follows: Get some

eels, trout, or minnows, and cut up into small pieces, put them into a loosely corked bottle and hang it in the sun for two or three weeks in summer, an oil will be formed on the top which emits a very strong odor. Sprinkle a few drops of this oil on the bait and around the trap. It will be sure to draw mink from some distance. The chain of the trap should be fastened to a spring pole to lift the animal out of the reach of depredators, or if the trap is set near water it should be attached to the sliding pole, so as to drown it at once.

The Muskrat.—Find a log with some recent droppings of the muskrat on it, a notch is cut in the log for the trap, an inch or two under the water. The trap is fastened to a spring pole. If [illegible] the land, among weeds and bushes, he will not unfrequently twist off his leg and escape. The traps are also placed in the runs, on bogs and old muskrat houses, and wherever there are recent indications that the muskrats come to feed. Where the game is scarce, the traps are sometimes baited, but otherwise this is not necessary. Carrots parsnips, apples, potatoes, or a piece of the flesh of muskrat can be used for bait. A stick is stuck in the ground, slanting in such a manner that the end shall be 6 or 8 inches above the treddle of the trap. The bait is stuck on the end of the stick, and in this way, if there are any rats in the vicinity, you are pretty sure to catch them. Sometimes the traps are covered with an inch or two of weeds; and some trappers put a drop or two of the oil, found in the glands of the muskrat, on or near the traps. Equal, if not better than a steel trap, is an old barrel. Sink it near the bank of the ditch, where there are evidences of the presence of the animals, to the level of the ground, and half fill it with water. Put in a couple of shingles, or light strips of board, to float on the water. Place sweet apples or carrots cut in small bits in the runs of the muskrats, and toll them to the barrel. Put several pieces upon the floats, inside. The rats will jump in after their food, and will not be able to get out. Where they are plenty, several muskrats may be taken in a night by this simple trap, it costs nothing but labor, can be visited at one's convenience, and there is plenty of room in it for a dozen or more at once.

Squirrels.—In trapping squirrels, set a steel trap on the upper rail of a fence near where they frequent; set a pole with an ear

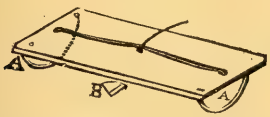
of corn, or some other squirrel food fastened to the end of it, up against the side of the fence, leaning in such a position as to spring the bait over the trap at a hight of six or nine inches; when the squirrel reaches to get the bait he will get into the trap.

Skunks.—Take an old barrel, and place it on its side on a triangular stick of wood about 7 inches high, fastening the bait on the bottom of the barrel. When the skunk goes for this bait as soon as he passes the centre, the barrel turns up with the skunk, without making any scent. Then take it by the tail and do with it as desired. Care must be taken not to place the barrel too high, as it might throw over and not remain upright. The more skunks you catch in the same barrel, the better the trap.

They may also be caught with the steel trap and spring pole. Set the trap near their hole or path. Strew pieces of meat or dead mice before and after the trap. The offensive discharge can be prevented either by a blow over the back or by seizing the parts by the hand and pierce it's throat with the other.

Moles and Gophers.—To exterminate this animal, it is some-

Fig. 1.



times considered best to remove the mole-hills; these contain nests, which may be destroyed by the spade as follows: Mark every new mole-hill by a slight pressure of the foot, and observe on the following day whether a mole has passed over it and destroyed such mark; this operation should be repeated two or three mornings in successively, but without making the pressure so deep as to alarm the animal, and occasion another passage to be opened. Traps should be then employed, as shown in figs. 1 and 2. These traps are made of wood, and may be thus constructed: Take a piece of wood about four inches long, two inches wide, and about half an inch thick. In one side of this wood insert two half circles of wood, as at A A, fig. 1. Bore a hole through the centre, and also one at each end. Make two loops of wire by simply bending the wire and pinching it through the holes at each end, so as to leave the ends standing up a little

way out of the holes, above the surface of the wood, where they are to be tied to a string. In the half circle of wood, cut small grooves, and open the wire loops so that the wire may lie in these grooves, then plaster them over with mould. To set the trap, select a tough green stick to act as a springle, and tie a piece of strong cord to the end of it. Pass the other end of this cord through the hole in the middle of the trap, and tie a knot in it. This hole must be large enough to allow the knot to pass through easily. A little wedge of wood, as seen in fig. 2, is then pushed up between the knot and the wood underneath, so as to keep the knot from slipping through, and two pieces of wood are to be placed across the trap, to keep it down to the ground. The springle being fixed in the ground, is now driven down and tied to the string to which the wires are attached. The trap is

Fig. 2.

Mole Trap.

then to be set in the places previously marked, and when the mole attempts to pass through its run, it is compelled to go through one of the half circles of the trap, and in doing so, it moves the wedge which holds the knot of the string tied to the springle. This done, the spring flies up, draws the wire loops tight, and the mole and the trap are by this means both suspended in the air.

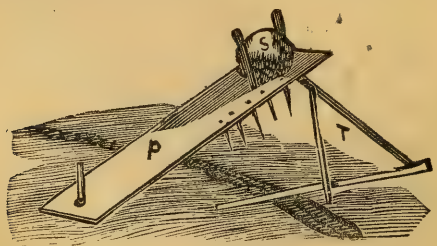


Fig. 28—Mole Trap on " Figure Four " Principle.

A more simple trap, but very effective one, is shown in the diagram.

The plank (P), 8 to 12 feet long, has a hole in the lower end which passes over a pin driven into the ground, to hold it in place. Three or more stout wires, very sharp, are inserted an inch apart on each side of the end of the plank. The pairs of wires should be about 9 inches apart. A stone or other weight, (S) is added to bring it down forcibly. A common figure 4 (T) is placed under the plank, with the trigger lying across the mole track. When setting it, the track is flattened with the foot, where the trigger is to rest upon it. The plank should have a fall of 12 to fifteen inches. The mole in passing, in either direction, lifts the trodden ground and the trigger resting upon it, and is instantly pierced by the descending points."

The Otter.—This animal is a great enemy to fish, and the depredations it frequently makes are such as to render the destruction of the animal necessary; to accomplish this, proceed as follows; Go along the stream; look for the deepest holes, where the fish are sure to fly when pursued. Look about narrowly and you will see the tracks where the otter comes out of the water up the bank; and often you will find a small tuft of grass greener than the rest; open this and you will find the dung of the otter, full of scales and bones of fish. Having found out a favorite landing-place of the otter, make a run, slanting from the water up the bank, with a trapping-paddle; dig out a place exactly the form of the trap; set the trap slanting, so that the otter should not tread on the spring; cover it over with fine mould—dry leaves, or rotten wood, level with the ground. When done, go back as far as you can, and with your hand throw water on the place where the trap is set and all around, to take away the scent of your hand and the fresh mould.

Fasten the trap as follows: Cut a small tree, the size of the chain ring, and set it upright near enough to the path to help the animal into the trap, supporting it in that position and securing the trap and game by withing or tying the top to another tree. The ring should be slipped on the butt and fastened by a wedge. Before leaving, perfume the trap with a few drops of the fish oil as mentioned on page 31. The musk of the otter is very good. This is a oil taken from two small glands called oil stones, situated next the skin on the belly of both sexes.

The otter's sense of smell is very acute. Care must be taken

to remove any trace of the trapper. While the trap is unsprung, keep as far as possible from it. The otter may be domesticated, though, from its ferocious disposition, this is a task of much difficulty. In order to do it effectually, so that the animal may catch fish, or assist in fishing, they should be procured as young as possible, and be first fed with small fish and water. Then bread and milk is to be alternated with the fish, and the proportion of the former gradually increased till they are led to live entirely on bread and milk. They are then taught to fetch and carry, as dogs are trained, and when they are brought to do this well, a leathern fish stuffed with wool is employed as the object to be fetched; they are afterwards exercised with a dead fish, and chastised if they attempt to tear or mangle it. Finally, they are sent into the water after living fish. Otters generally bring forth their young under hollow banks, or a bed of rushes, flags, or such weeds as the place affords in greatest quantities.

The Fisher.—These are very powerful for their size, and will frequently tear down the Dead Fall and get the bait without being caught. The steel trap is best, with the same methods used in taking the mink. The trap should always be fastened to the spring pole, unless the animal is lifted from the ground, he is nearly sure to gnaw off his leg or the pole. An old Hunter gives the following instructions: "For capturing the fisher, we always draw a trail composed of oil of anise, assafoetida, and the musk of the muskrat, mixed with fish oil, and placed in a deer-skin bag, about the size of a mitten, pierced full of holes with a small awl. If drawn along the line of traps, the scent is sure to attract the fisher's attention, and when an animal once finds it, he will follow the trail till he comes to the trap. Mink are sometimes caught along trails of this kind, and it is a good plan to set a trap for wolves on the line, as they are likely to be attracted to and follow it. In setting the trap, we either place it in a hollow log, or build a strong house and place the trap at the entrance. In the latter case the bait should be placed about two feet back from the door. The trap should be covered with finely powdered rotten wood. A spring pole should be used, as all animals of the canine family will follow the trail and rob the traps. Deer meat, muskrat meat, or fish, make good bait for the fisher, marten, mink or wolf.

The Beaver—These animals are now exceedingly scarce. The clearing up and cultivation of the soil has driven them nearly all from the country. When a beaver pond has been found, the principal object is to take each beaver in it alone and drown it as soon as possible. If the remaining beavers get a knowledge of capture of one of their family they will all remove away. The trap should be set near the shore, about three inches under water. Carefully hide it by a covering of some soft substance that

will not interfere with its springing. Use for bait a small portion of beaver castor, a milky secretion found in glands near the testicles of the male beaver, leave it on the bank near the trap. Carefully remove all trace of foot-prints by drenching the tracks with water.

Rabbits.—The steel trap is simply buried in the run, and leaves, grass, or earth strewed over its surface so as not to give an appearance of an unusual character. Bait with a piece of apple. Precaution should, however, be taken to tie the trap to a bough or peg in the ground, by a piece of strong string, otherwise the rabbit will carry away the trap. Wire snares are also very effective traps. They are made of fine copper wires, and being inexpensive, a number of them may be set where rabbits abound. The wires are made to form a running loop, just such as we form with string; only the wires are so arranged that they all unite to form the one loop. No ingenious person could fail to form the loop, after a few minutes' handling of the wire. It is so simple that it will suggest itself. The loop thus made, is set across a run, so that the top of the loop stands say about six inches from the ground; and in order to keep it in its proper position, a peg of wood is driven in the ground a little way from the run, and in the top of the peg there is a slit which serves to catch the ends of the wires and holds them in position. The wires must be

tied firmly at the end to a string, which may lie on the ground; the end of the string should be tied to a bough sufficiently high from the ground to yield a little when it is pulled. This yielding of the bough prevents the rabbit from snapping the string, which it would otherwise do in its endeavors to escape. Netting rabbits is effected by nets being placed across the runs, but it is very seldom resorted to, as it is less practicable than other methods. There is an ingenious mode of taking rabbits by sin-

FIG. 1.

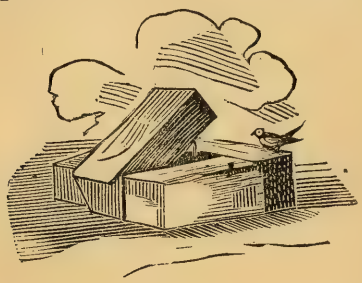
gle wires and what is called a springle, the same in principle as the spring pole, as seen in fig. 1. A strong and springy stick (A) is stuck deep into the ground in an upright direction; its smaller end is then bent over, and also buried sufficiently in the ground to keep it down. To this end a wire (B) is tied by a short string, and when the rabbit is caught, his first jump pulls the end of the springle out of the soil, and it then lifts the rabbit completely from the ground, thereby depriving itof all power of escape.

Birds.—In the day-time birds are taken principally by means of nets, springs, traps and bird-lime. The method adopted in the suburbs of London is most ingenious. The nets used are generally twelve yards and a half long, and two yards and a half wide. The bird-catcher provides himself with *call-birds*, usually consisting of five or six linnets, two goldfinches, two greenfinches, a woodlark, a redpole, a yellow-hammer, titlark, and perhaps a bullfinch. These are placed at short distances from the nets in little cages. He has besides what are callsd *flur-birds*, which are placed within the nets and are raised upon a moveable perch, which the bird-catcher can raise at pleasure by means of a long string fastened to it, and gently let down at the time the wild bird approaches. The flur-birds generally consist of a linnet, a goldfinch, and a greenfinch, secured to the flur by a contrivance called a brace, which secures the birds without doing any injury to their plumage. When the bird-catcher has laid his nets, he disposes of his call-birds at proper intervals. The instant that

the wild birds are perceived, notice is given by one to the rest of the call-birds, and they all raise their voices in a loud and cheerful chorus, which arrests the wild birds in their flight and attracts them down to the spot near which the nets are placed; and the bird-catcher watching his opportunity, closes his nets upon them.

The *Springle* is a somewhat complicated apparatus, but very effective as a bird-catcher, it consists of five parts, as follows: 1. The *Stump:* a small stout stake of wood about five inches in length, which is fixed firmly in the ground, with its head about an inch above the surface. 2. The *Spreader:* a small bent switch, having a notch at its thicker end; it is kept in its bent position by a piece of small cord whipped over its smaller and larger end, and united just above the notch. 3. The *Bender:* a piece of pliant withy or hazel, of about eighteen inches long; both ends of it are fixed into the ground so as to form a kind of arch. 4. The *Springer:* a hazel rod of about four feet in length, thick at one end and tapering at the other; to the tapering end is fixed a piece of string. 5. The *Catch:* a sound piece of wood fixed at the end of the string of the springer; it is about half an inch long, a quarter broad, and the eighth of an inch thick. It is slightly bevelled off at one end, so as to adapt it to the notch of the spreader. 6. The *Noose:* a knot formed of horsehair, fastened below the catch. In setting the springle, the following directions are to be attended to:—Drive the stump firmly into the ground. Place the spreader around the stump, so that its bight is is in contact with it. Fix the bender into the ground at about the length of the spreader from the stump; then fix the thick end of the springer in the ground at a little distance from the bender, and the small end of it bent down till one end of the catch is placed upwards and on the outside of the bender. Raise the spreader about an inch from the ground, and put the small end of the catch into the notch. Finally, arrange the horsehair slip-knot loosely around the bender, and the trap is set. Scatter a little seed within, and for some distance around the spreader, and watch at a short distance to seize the bird as soon as it is ensnared, otherwise it will flutter itself to death or be strangled. Birds may also be caught by means of horsehair loops. To accomplish this, tie a large number of loops upon a long string, the longer the better, and lay this string in a series of rings wind-

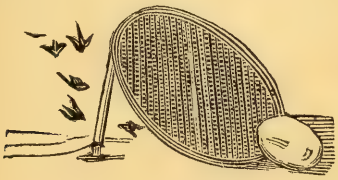
ing outward from the centre, so that the ground will be completely covered with them; then lay the trap, with the loops properly opened, on a spot resorted to by birds. When a bird gets its feet into a loop, it is almost certain to draw the loop tightly about its legs, and is thus caught. The common brick-trap is well known; it consists of four bricks arranged as in the engraving, two lengthways, upon their edges or narrow sides, one in front, snd the fourth between the two side bricks; this is so placed that it will fall and lie easily upon the front brick. Within the trap a stout peg is driven into the ground, upon which a forked twig is placed horizontally; above this a stick is placed, one end being on the twig and the other end supporting the brick



THE BRICK TRAP.

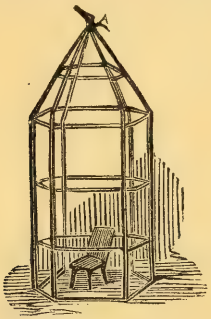
in a slanting position. The end of the twig that rests upon the peg is cut flat to give it a better hold. The bait is strewn upon the ground inside of the trap. When the bird flies to the trap he generally perches for a moment on the forked twig and causes it to give way by reason of its weight, the brick that has been propped up then falls upon the front brick, enclosing and securing the bird. In preparing this trap, caution should be used in setting the upper brick, so that it does not fall between the two side bricks unsupported by the front brick, as in such a case the bird would be crushed to death. The *Down-fall* is an effective trap for taking fieldfares, thrushes, red-wings, black-birds, larks, sparrows, starlings, and all birds that congregate upon the ground. It is most effective when snow lies upon the ground, for then the birds being hungry, are less shy than is their wont in the pursuit of food. The trap consists of an iron or wooden hoop

covered with a net, formed of meshes of about one inch. The lighter the net the better. The hoop is put to stand at an angle, as in the engraving, and is propped up by a piece of stick about two feet in length. At the bottom of the net, and lying upon that part of the hoop which rests upon the ground, is placed a heavy stone, in such a manner that directly the stick is withdrawn, the net will drop down suddenly upon the birds. A long string is tied to the stick, and is held by the person, who keeps as far away from the trap as is compatible with his being enabled to see when the birds are under it. It is better not to drop the trap when a single bird enters, as it will serve as a decoy, and a little patience will be rewarded by the capture of a number of birds instead of one.



THE HOOP OR SIEVE TRAP.

In some parts of France a curious mode is practised of taking birds; a frame is constructed of the stripped branches of the



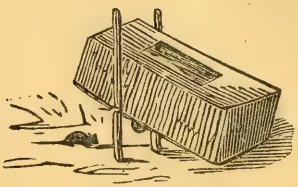
slender straight-growing poplar, in the centre of which a seat is placed for the bird-catcher to sit upon. The frame so constructed is afterwards covered with boughs and evergreen shrubs,

among which are openings for the entrance of the birds, and also for the hands of the bird-catcher to come out, who is seated within. When the birds alight on or about the sides of the holes, the bird-catcher nimbly seizes them by the hand or by means of a small flap trap which he thrusts out at one of the holes, and upon which the birds alight. Woodcocks, partridges, and other land birds are said to be easily caught by what is called *low-belling*. In this method a strong light is employed and two persons carry nets, one on either side of him who bears the light. The light-bearer caries a large bell, which he rings incessantly and with a regular jingle. The birds after a while become so alarmed by the combined effects of the light and the bell, that while some fly against the nets, others fall upon their backs on the ground and will not move, and so are captured.

For catching birds by means of bird-lime, the following is the most successful method:—Take a large branch or bough of a tree, and after having trimmed it of all the leaves and superfluous shoots, cover it all over with bird-lime, taking great care to lay it on properly, for if it be too thick the birds will see it and will not settle on the bough, and if it be too thin it will not hold them when they do. When the bough is well limed it must be fixed on a low dead hedge near a rickyard, hemp or flax field, or in some other place which is a favorite resort for small birds, and the sportsman having concealed himself is near to the bough as he can, must imitate with his mouth or with a bird-call the notes which birds make when they attack or call one another; but if he should not be expert at this, there is another mode of attraction, called a *stale*. A hawk of any species or a bat make very good stales, but an owl makes the best of any, for this bird never shows himself at daylight without being followed by all the small birds that see it; so that if an owl be fastened in some conspicuous place at a short distance from the limed bough, the birds will collect around it in great numbers, and will be sure sooner or later to settle on the bough and be taken. When one bird is thus enticed and stuck fast, it must not be disengaged, but suffered to remain and attract others by its fluttering, so that many may be taken at once. If a live owl is not to be obtained, a stuffed one will do nearly as well. Sometimes the representation of an owl carved in wood is used, and being painted in the natural colors of the bird, is found to succed very well.

To Make bird-Lime.—Put half a pint of linseed oil into an old pot or pipkin, and in which it will not be more than one-third full, put it on a slow fire, stir it occasionally until it thickens as much as required, which will be known by cooling the stick in water and testing it with the fingers. It is best made rather hard; then pour it into cold water. It can be brought back to the consistence required by the admixture of a little Arch-angel tar.

Mice.—A simple and effective trap may be made as seen in the following cut.



It consists of a common brick with two pieces of wood inserted into the ground; a bit of sewing-thread is tied to each stick, and a loop is formed in the thread in the centre, into which a bean is put. To form this loop, it is only necessary to take the two ends of the string and cross them, in the same manner as when tying a common knot; then draw the ends, and the loop so formed will become smaller; insert the bean, and draw the thread tight, until it slightly penetrates the bean. Poise the bean half-way between the two sticks, and let the brick rest upon the string, which should be tied tightly. When the mouse nibbles at the bean, it will gnaw the thread, the brick will fall, and the mouse will be killed.

Another very good one is given by a correspondent in the Weekly Tribune.

"To make a simple and efficient mouse trap, procure a tolerably tight barrel—a salt barrel with one head will answer—bore a hole near the bottom for a place of entrance; set it in the place where the mice "most do congregate," throw into it an armful of ears of corn and a handful of rags or waste paper to make a nest, cover it so that the mice may "keep dark," and let it stand quietly a few days to give the mice time to colonize, then plug up the entrance. As mice are lively little animals, dash in a few gallons of water to moderate their friskiness, then take the game at your leisure, set your trap again, and go on your way rejoicing. The above plan will do the "biz," and I have not patented it."

Fishing.

The "regular season" for fishing is between the months of April and November. The best time of the day for angling is, during the summer months, from sunrise to two or three hours after, and from two hours preceding sunset until an hour after that time. In the colder months the best hours are from twelve to three, for the fish are shy at biting until the air is warmed by the sun. A warm lowering day is, of all others, the most propitious; on a cloudy day, also, succeding a moonlight night, the fish will bite readily; the most favorable winds are south and south-west—easterly, the most unfavorable.

When fishing, keep at some distance from the margin of the stream, so that your shadow may not fall upon the water, and frighten away the fish; to avoid the same consequences, do not indulge in laughter or loud conversation.

If the water be still, throw in small pieces of ground bait; if a strong current, large pieces; do this quietly and cautiously, for fish are so wary and suspicious, that it requires the nicest delicacy and management to circumvent them.

When the wind blows right across the water, fish with your back to the wind, as you will not only be able to throw your line better, but the fish will be on that side, attracted thither by the flies and other natural bait which the wind will blow into it.

Fishing-Rods.—At all fishing-tackle stores, rods made of vine, bamboo, hazel, and hickory, of various lengths and fashions, may be procured; some are made to fit into canvas bags, whilst others resemble walking canes; the former, however, are decidedly the best, being longer, and better made, as the joints are more carefully fitted together. The rod should, when put together, taper gradually from the butt end to the top, and be perfectly straight and even. For general purposes, a rod of about twelve feet in length is the most convenient; but in wide rivers, fifteen and eighteen feet rods are required.

Fishing Lines.—Good lines should be perfectly twisted, round, and without any irregularities, and, in point of color, those which are of a light grey, or brown, or white, are the most useful; some anglers, however, prefer a light sorrel tint. The bottom, or casting-line, for fly-fishing, which is affixed to the line on the

reel, must be of gut, and of about the same length as the rod; the gut should be strong at the top, and very fine at the "dropper," or bottom, and before any flies are made upon it, it should be picked and tried, to see that it is of a uniform thickness throughout.

Floats.—These can always be procured ready-made, of all sizes and every variety of shape. For small fish and slow streams, quill floats will be found the best; and in strong and rapid rivers, or for the larger kinds of fish, cork floats must be employed. If you prefer making to purchasing, procure a piece of fine-grained sound cork, and bore a hole through it with a small, red-hot iron, then put in a quill which will exactly fit the aperture, and afterwards cut the cork into the shape of a pear. When this is finished, grind it smooth with pumice-stone, and paint and varnish it; two or three bright colors in the painting will add much to the gayety of its appearance. The cork float should swim perpendicularly in the water, so that it may betray the slightest nibble, and must be carefully poised by fastening a few shot on the line.

Reels.—A reel is very useful, as, with its assistance, parts of a river may be reached which could not otherwise be attempted; it enables the angler also to play his fish with the greatest ease and certainty. When purchasing a reel, a multiplying one should be selected, as it is superior to all others, and enables the angler to lengthen or shorten his line rapidly. It must be kept clean and well oiled, and great care taken that no grit of any kind gets into it.

Hooks.—Hooks are of various paterns and sizes. When fastening the hooks on your lines, use strong, but fine, silk, and if you can get it near the color of your bait, so much the better; wax the silk thoroughly with shoe-maker's [illegible] nd wrap it four or five times round the body of the hook, then place the gut or hair on the inside of your hook, and continue winding the silk tightly round till you have wrapped it about three parts down the hook.

Whipping is finished off by slipping the end of the silk through the last circle, and drawing it tight. Knotting, by laying two pieces of gut or hair together, one overlapping the other some three inches or so, then holding one end in the left hand, while

forming a simple slip knot on it; then turning the other end to the right, and doing the same; after that, drawing the two together, which makes the knot complete. No direct pull will ever unloosen this water-knot, though it can be undone easily.

Baits.—The common angle-worm is a universal bait for fresh water angling. They grow almost everywhere except in sandy soils. The common white grub is also used successfully in trout fishing. They are found in fresh ploughed earth, and under old stumps, decaying foliage, &c. The grasshopper is also good for trout in his season. The trout or salmon spawn will attract trout quicker than any other possible bait, but it is not always to be had. Catapillars, flies, locusts, beetles, &c., are good for trout.

Live bait consists of the minnow, the shiner, (or mullet,) the gold-fish, and other small fish. Ponds of these fish are kept by those who furnish baits, and by some habitual sportsmen.

The frog is an excellent bait for pickerel. They are sometimes used whole, but in cases where you use the hind legs only, they should be skinned.

For salt-water fishing, the shrimp is the leading bait. The shedder crab, in its season, is most excellent, particularly for stripped bass. The soft-shell clam, cut in small pieces, is a good bait for many kinds of sea fish. The horse-mackerel, or small blue fish is an excellent bait. Where the tide runs swift, use the tail, leaving on the fins.

Prepairing Baits.—Salmon-roe is an excellent bait for trout. The roe of large trout or salmon-trout is also good. These are tempting baits for many other fresh water fish besides the trout. Old fishermen preserve it as follows: First put it in warm water, not hot enough to scald much—then separate the membranous films—rinse it well in cold water and hang it up to dry. The next day salt it with two ounces of salt and a quarter of an ounce of saltpetre to the pound of roe. Let it stand another day and then spread it to dry. When it becomes stiff put it in small pots, pouring over each some melted mutton tallow. You can then use a pot of preparation as you may want it for bait. It is excellent for trout, and indeed for almost any fry in fresh water.

Angle-worms are thus prepared: Take a lot of common moss and wash it in clean water, press it until nearly dry, then put it in a earthen pot with your worms. In a few days the worms will

look exceedingly bright, and be tough and active. If you wish to preserve them longer, you have only to take out the moss, wash it, sponge it, and return it to the pot. Repeat this process every three or four days, and your worms will be in excellent condition as long as you desire to keep them.

Pastes for Bait.—The English are famous for paste baits, some of which are made as follows: Shrimp paste is made from shrimps, being prepared in every respect similar to the salmon-roe, before given. Wheat, rye, barley, and other grains, soaked in water, and then boiled in milk, are good baits for small fish in still water. Soft bread and honey, kneaded together, is a good bait. Grated cheese worked into paste with soft bread, honey, and saffron, is frequently used. Tallow chandlers' scraps, fresh scalded to separate the slimy particles—these particles are then mixed with clay and bran, and are a good ground bait. It is only good when fresh made.

The Pike or *Pickerel* is fond of shady places, and in summer they frequent the parts of the stream nearly where the pickerel weed grows. They generally spawn in March or April, and earlier in some southern streams. In winter they get under rocks, or stumps, or into convenient deep holes, and they can be taken taken then with small live fish for bait. In rivers you can generally catch pickerel near the mouth of some small stream emptying into the river; the fall of the year is the best time for catching them. In the hot summer months they will seldom bite at all, except, perhaps, in a very windy day. In the fall, too, they are in better condition. Pickerel fishing in the spring is sometimes very successful, however, though the fish are not so good when breeding. In the more northern waters they are sometimes taken as early as August in good condition.

The tackle used for pickerel, is a pretty stiff 10 foot rod, with a reel, and some 50 or sixty yards of flax line which should be protected by the hook with gimp or wire. The Limerick or Kirby salmon hook is used. The size is 0 to 5, according to the size of the fish. In a running stream, the sinker and float will also be found necessary. The bait should be a small live fish, or frog, or the hind leg of a frog skinned. Worms are sometimes used in small streams, where the water is clear, and the game small. In using live bait, when the pickerel takes it, do not draw your

line too quick. The bait itself, if properly impaled, will be very lively, and will be apt to make a violent effort to escape its enemy. Inexperienced anglers may take this movement for a veritable bite; but when the bite comes, there is no mistaking it. In impaling a small fish for bait, pass the hook under the back fin, just under the roots of its rays. This will not disable the fish, and it will appear lively in the water. When using live frog bait, you pass the hook through the skin of the back or belly, or the back muscle of the hind legs. The live frog is generally used on the top of the water—if not, you should let him rise occasionally to take the air. When the pickerel has seized your bait, give him plenty of time to swallow it, and also plenty of line. Sometimes he will hold it in his mouth and play with it before gorging. On bringing him to land, be careful of his jaws, for he has a set of teeth, sharp as needles.

Perch.—The perch spawns at the end of April or beginning of May, depositing it upon weeds, or the branches of trees or shrubs that have become immersed in the water; it does not come into condition again until July. The best time for fishing for perch, is from September to February; it haunts the neighborhood of heavy deep eddies, camp sheathings, beds of weeds, with sharp streams near, and trees or bushes growing in or overhanging the water. The baits for perch are, minnows, red, marsh, brandling or lob worms, and shrimps. The tackle should be fine but strong, as with a fish bait a trout or pike may frequently be hooked. Perch, unlike fish of prey, are gregarious, and in the winter months, when the frosts and floods have destroyed and carried away the beds of weeds, congregate together in the pools and eddies, and are then to be angled for with greatest success from 10 to 4 o'clock, at the edge of the streams forming such eddies.

Trout, which are caught in the numerous running streams of the United States, vary in color, appearance and size with the quality of the soil pertaining to the streams they inhabit. The fish called "black trout," which are found in sluggish muddy streams, does not belong properly to the species. Trout will vary as much in shape and flavor, as in the color. They spawn in September and October, and the time for taking them is in the Spring and Summer. You may fish for trout until the 20th August, though the finest ones are taken in the months of May

and June. They bite the best in March and April. You can hook trout in several ways.

Some prefer fly fishing, and this is the most interesting mode in Summer. The rod to be used should be light, and the line made of hair, or silk and grass. The fly should be placed on a length of gut, or a single light hair. Do not fish with your back to the sun. Stand as far from the stream as circumstances will allow. Always throw your line from you—never whip it out. Fly fishing is only suitable for pleasant weather. The best time of day is early in the morning or just at sunset. The line should be about half as long again as the rod. It should be thrown up stream, and let the fly gradually float down, and if possible fall into the eddies where the fish is apt to retreat in case of alarm. Let your line fall into the stream lightly and naturally, and when you raise it, do so gently and by degrees.

In trout fishing with the fly, only a small part of the line is allowed to be in the water. The end, or leader, should, as before stated, be a single light hair, if you can get one, as the trout is extremely shy and suspicious. If you stand on the bank of the stream, throw your line as far up as possible, as you cannot expect to catch a trout opposite or below where you are standing. If bushes intervene between you and the stream, (which is all the better,) do not rustle them or make a noise.

The usual length of a rod for trouting is fourteen feet, though longer or shorter ones may be used, according to fancy or convenience. The bottom of the line, unless you have a light hair, should be strong silk-worm gut. The size of the hook will depend upon your flies. Nos. 4 and 5 are used for worms and beetles, and 7 to 9 for small flies. If the flies are too small, put two on the hook, as these insects frequently fall into the water in couples. The largest and best trout lie in shallow water, faced up stream, or else they lie near the surface. They are found on the south, or shady side of the stream. It is necessary to be exceedingly cautious not to show yourself, as if they see you they vanish for the day. Grasshoppers and other small field insects are frequently used with success when worms fail.

Worm Fishing for trout is practiced with similar caution. After a rain, when the water of the brook is a little riley, you can catch trout by this mode—sometimes very rapidly. It is usually

practiced in the spring. A single split shot will generally be enough to sink your line, unless the stream is deep and rapid. The rod should be of bamboo, 16 to 20 feet long, and the line shorter than the rod. Keep the point of your rod exactly above the bait, steadily following it, as the bait drags along the bottom. When the fish takes the bait, do not let him run with it, but keep a steady hand. Do not jerk, but play gradually with him. If the day be clear, and the stream shallow, the best way is to wade up the stream cautiously, throwing your line far up, and letting it come gradually towards you The fish always heads up stream and you should not fail to remember if he once sees you he vanishes.

Bottom Fishing with blue-bottle flies is practised as follows:—Use a silk or fine hair line, with gut leader, and a small quill-float. Hook No. 10 is about the proper size. You will want one or two split shot on the line. Fill a glass bottle with the common blue-bottle fly found on fresh horse or cow dung. Bait your hook with two of these flies, and let it sink nearly to the bottom. In this way you may catch trout in ponds, or deep waters deposited by running streams, and often in the slack water of mill dams, when you could not catch them in the stream itself. This kind of trout fishing is practiced in July and August. When the fish has taken the bait, play him towards the top of the water always. Do not let him tangle your line in the weeds or under-brush.

The fin of a trout, or rather small fish, is sometimes used as a bait for trout with good success. It is dropped and roved, as with a minnow or fly.

The Salmon.—This most delicious of fish sometimes grows to an immense size for a frequenter of fresh water. Salmon begin to run up certain Northern rivers in April, and stay there until the latter end of July, when they return to the sea. It is while thus running that they are taken by anglers and salmon fishermen. They deposit their spawn at the extreme point that they reach on the river, and by the time they return, the young fry are ready to return with them. The same young ones follow their parents up the river the year following, having grown to be about six inches in length. At the end of the second year they weigh from five to seven pounds, and it takes them six years to attain their growth.

The salmon, like the trout, is timid and easily frightened. When they become alarmed, they move very rapidly in the water, and go a great distance without stopping. It is, therefore, necessary to be extremely cautious in fishing them, and requires skill and perseverence. The most wary and scientific anglers have their patience tried in taking this fish, whose instinct leads it to astonishingly artful and singular efforts to escape. The feeding grounds of the salmon are swift streams, and deep lakes, with gravelly and pebbly bottoms, where there are easy outlets to the sea. The time for fishing them is early in the morning or late in the afternoon, and they may be taken from May until August. In the first of the season, worms, small fish, or shrimp, is the usual bait; but in July and August they are partial to the fly.

The tackle used for salmon, should combine strength with imperceptibility. A large sized reel is necessary, with some two hundred yards of line made of silk and hair combined, or a grass line is sometimes used. The leader should be four or five feet long, made of twisted gut, and with a swivel sinker, or a swivel alone in fly fishing. The rod should be fifteen to eighteen feet long, and elastic at the end. The proper hook for worm and live bait is the Kirby and Limerick pattern, Nos. 0 to 4; and Nos. 0 to 3 in fly fishing. Fishing with artificial flies is often very successful, the flies being made of gray and gaudy feathers.

Trolling.—One of the branches of angling which is generally practised at mid-water or thereabouts, and includes spinning with a live, a dead, or an artificial bait, with a small fish generally, or its representative. When neither fly fishing nor bottom fishing can be practised, in consequence of certain forbidding circumstances of water and season, trolling can be resorted to as an excellent substitute. The fish most commonly taken by any sort of trolling in our rivers are pike, perch, and trout. Trolling is divided into three parts, viz: sinking and roving, trolling with gauge and snap-hooks, and spinning. Sinking and roving is practised with a live bait; a minnow or a loach for the common trout or perch; bleak, gudgeon, dace, or roach, for pike or large trout. The best general bait for all sorts of trolling is the gudgeon. The rod used should be a long bottom one, with a good winch, and prepared plaited silk trolling-line. For foot-line, about a yard and a half of the best gut. The link to which the

hook is tied, should be of fine gimp, if pike are sought for; but gut, or three-twisted hairs, will do for trout and perch. The baits must be strong and lively, and placed on the hooks with as little injury to them as possible. Allow the bait to swim here and there, generally at mid-water, but in deep places, deeper, drawing it up gently to the surface now and then, letting it sink again, and guiding it to the best looking spots of the locality. Snap-baits are mostly used at seasons when pike do not feed with sufficient voracity to pouch their baits promptly. Their merit lies in allowing the troller to strike quickly, before the fastidious fish, suspecting something wrong, has time to eject the bait from his mouth. The rod used must be short and stiff; that known as the punt barbel rod being the best. Snap-baits are two-fold—one, which does not spring when you strike the fish, and the other which does. The first-named consists of three hooks—two large ones, tied back to back, with their barbs pointing different ways; and one smaller hook tied on at the top of the shanks of the others, and pointing straight out from them. The spring-snap is generally used with dead bait; it requires deep insertion in the bait to allow the spring to act, which it will not do without some considerable resistance. Spinning is a dashing, killing method of angling, and the practice of it requires considerable muscular exertion. The best spinning rod is made of a single piece of East India mottled cane, fourteen or sixteen feet long, well ringed, with a screw winch, requiring no winch fittings. With a rod of this description, salmon and large trout can be trolled for in the deepest and widest waters. In narrow streams, the angler can spin with a very small portion of line out, and almost avoid casting, the length of the rod allowing the bait to be dropped noiselessly wherever it is wished, and to spin it accordingly. The baits used in spinning should be of the most brilliant colors; the brightest minnows, gudgeons, you can procure. The hooks used in spinning should be of the bright steel color of the wire, not changed to the ordinary blue hue of hooks; and they should be whipped on with light-colored silk, waxed with white wax. Artificial spinning baits are sold at the various tackle stores. They all kill fish more or less successfully; but the majority of them are inferior to the natural bait. A small sail boat, or skiff is used, with an attendant to manage the boat as you direct. You can use the live bait, or an artificial bait, as

is most convenient. Some sportsmen are very fortunate with the artificial bait. A stiff rod and reel, with the same tackle as before described, and no sinker—is all that is requisite. The boat should move gently, and let your line drag far in the rear. With artificial bait the fish is hooked almost instantly. If you use live bait, be exceedingly careful in determining when the fish has gorged it. You should give him several minutes after he has seized it, for this purpose. On seeing the bait, a pickerel will generally run off with it, and will then stop to gorge it, but does not always do so. The sign that he has swallowed it, is a peculiar slackening of the line, which experienced anglers can easily understand. But if he has gorged the bait, he will soon start off a second time, and sometimes will stop and start off the third time. In these cases, you should never be in a hurry. When you are convinced that he has taken down the bait, draw a tight line, and strike for your fish. If he is large, you should play with him until he is quite exhausted, or you may lose him in the attempt to land. The difficulty of taking a pickerel from the hook may be obviated in a measure by gagging. For this purpose some anglers provide themselves with prepared sticks, of various lengths. If the hook is completely swallowed, as is frequently the case, open the stomach in the middle, cut away the hook, and unslipping the knot that holds the gimp, draw it out that way rather than through the mouth.

Salt-water Fishing.—Although less art and skill are necessary for sea fishing, the sport is increased by the exhileration of a pleasant sail or row upon the briny deep.

The first requisite of salt-water fishing is a good boat, which may be anything, from a row-boat up to a yacht of a hundred tons, as the taste or the means of the sportsmen may dictate. For in-shore, or harbor fishing, a sail-boat of fifteen feet in length, with a cuddy forward for shelter in case of rain, is the most convenient craft. It should be as light as possible, yet strong enough to resist the action of heavy waves, or an occasional bump on the beach or the rocks.

If you are going "down below" for a day, you want a cod-line for each member of the party; also a perch-line, and, if in the season for mackerel, a mackerel jig.

The best time for starting is on the ebb tide, which should be at an early hour in the morning to render the trip most favorable. You will then have the tide in your favor, if the wind should be light or not fair, with the same advantage to aid you in getting home. You will first run out into deep water, to some approved fishing-ground, whose locality you must learn from those acquainted with the coast. The water will be from ten to thirty fathoms in depth. Here you will anchor if you can · if not, lie too.

Cod and *Haddock.*—Bait each hook, of which there should be two on the line, with a whole clam, and let the line run out till the sinker strikes the bottom ; then haul in about three feet, and hold the line between the thumb and forefinger. When you feel a sharp pull, jerk the line up to hook the fish, and haul in. Keep the fish bearing upon the line all the time, to prevent him from escaping. It will take some time to haul in twenty or thirty fathoms of line, but when a cod or haddock, weighing five or ten pounds, heaves in sight, you will be amply rewarded for your patience.

May and June are the best months for this kind of fishing; and the later in the season, the farther out to sea you must go.

Rock Cod.—If you do not succeed in the deep water, you may run in, or near the rocks, anchor, or make fast the painter of the boat to some buoy or spindle which marks a sunken ledge, and you may catch rock-cod when the other kind are not to be had. They are a very fine fish, either for the pan or the chowder-pot.

Perch.—After you have caught all the cod and haddock you want, you may desire a mess of perch, which are undeniably the finest little fish for a "fry" to be caught in our waters. You will anchor, or moor, near the rocks or on the verge of the channel, off some point of land where it makes a sharp turn. Take the prower line, and be sure that the point and barb of the hook are sharp and clean. Bait with the side or head of the clam, and see that the bait is well adjusted, for perch are very apt to nip the clam and pull it off the hook. Let the sinker drop to the bottom, then raise it about a foot, for the fish swim near the rock or gravel. When the fish bites, jerk the line up. If there are any perch near they will bite quick. If you do not catch one in a few minutes, pull up and look at your hook, and you will probably find your bait stolen.

With the perch you will catch an occasional "sculpin," or on the south shore a "grunter" or sea-robin, which is there also called a sculpin. These fish are good for nothing, and are regarded as a nuisance—more trying to the patience of the fisherman than no fish at all. They are armed with sharp horns, and must be handled with care.

Mackerel.—If you are so fortunate as to fall in with a school of mackerel, you will abandon all thoughts of cod, haddock, and perch, for no sane fisherman ever catches anything else when these "beauties" are to be had. If you strike the school, occasionally heave over refuse fish or clams, cut up fine, to keep them near your boat. Bait your jig with a bit of salt pork, and sink it only two or three feet. They bite quick and sharp. Haul them in, swing them over the fish-tub with a jerk, and the mackerel drop from the line without any further assistance. You will catch them just as fast as you can pull them in, or you will not catch them at all.

Flounders.—These fish may be caught at the wharves or from the boat. Bait with clams, and sink to the bottom. as with perch.

Tautog—Black Bass.—These fish may be caught near the rocks on the south shore of New England. Bait with clams or manhaden, and fish near the bottom.

Blue Fish.—These fish abound in all the waters of Massachusetts, Rhode Island, and Connecticut, and the catching of them is an exciting sport. The tackle consists of a large hook, attached to an ivory or white bone imitation of a small fish. In the absence of this gear, a common cod-line, with a piece of red flannel wound round the cord close to the heel of the hook, so as to form a cylinder about half an inch in diameter, will answer a very good purpose.

For blue fishing you need a quick working boat, and at least a five-knot breeze, for the fish are taken by trolling. Throw your line overboard, and make fast at the stern of the boat, while under full headway. The hook will drag near or on the surface of the water, and the blue fish will snap at the bait, taking it on the wing, as it were. When he gets on, pull in, and be sure you keep a taut line all the time, or the fish will escape. If you succeed in getting him into the boat, hit him over the head with a club,

for he has teeth, and has been known to bite when he could not help it. He is very active, and will be troublesome if not silenced as directed.

Taking the wind abeam, with tacks of two or three miles, makes the pleasantest sailing.

Eel.—The eel is found in rivers, reservoirs, ponds, canals, &c., being very fond of still water with a muddy bottom. Those that have chosen for their habitation rivers having uninterrupted communication with the sea—unlike the salmon—are supposed to migrate to the sea, deposit their spawn, and the young to enter the rivers, and pursue their upward way in large swarms, until they find fresh water wherein to take up their future habitation.

The eel may be taken by the angler at the bottom with worms, loach gudgeon, bleak, minnows, a small lamprey, the entrails of fish, flesh, or fowl, or, indeed, with almost anything; but it is generally caught by night-lines, to which several hooks are attached, and which are cast into the water by a brick, stone, or other weight being attached thereto, and the other end pegged into the bank, or tied to a branch of a tree, or to a bunch of weeds on the water-side. Sniggling is a plan successfully adopted for catching eels in the day-time, when they creep into holes in the bank or woodwork, or under stones, or logs of wood. It is practised by baiting a small hook or stout needle bound to the line for half of its length only with a worm, and presenting it at the entrance of the hole, or at the edge of the stone or log by the aid of a bent rod; the eel takes the bait, and the angler holds the line taut until his prey, gradually relaxing its adhesion to its shelter, is drawn out. Bobbing also is practised by first stringing a quantity of large lob worms upon worsted, attaching them to a bell-shaped piece of lead, sufficiently large to readily sink them; the lead and worms are secured to a pole of sufficient length, say twelve or fourteen feet long, by a piece of stout cord. The eel may be felt to bite, when it is to be gently but quickly lifted, either out of the water, or to be suffered to drop into a basket floating ready for its reception; their teeth become entangled in the worsted, from which they cannot disengage themselves, if the angler is an adept at the process. Eels are caught in rivers in baskets or pots, to which access is easy, but retreat difficult, wherein have been placed some small fish or some flowers of the

elder tree, and in bucks, which are large baskets made on the same principle, fitted to a framework, and at suitable periods and convenient states of the water, lowered therein, when the eels run into them on their downward passage to the sea, or when seeking a new locality. Eels are also taken by spearing them whilst they are lying singly on the bottom, or in clusters imbedded in the mud. The instrument used, called an eel-spear, is of six or eight prongs of flattened iron, the edges of each prong be-notched, and fastened to a long pole. It is then violently plunged into the mud and quickly withdrawn; the eels are retained between the prongs by their serrated edges.

The Cat-fish.—This is a fresh water bottom fish found in streams and ponds all over the United States. It is an easy matter to catch cat-fish. You have only to procure tackle strong enough to draw them out of the water, using a hook according to the expected size of your game. A single or double gut leader is necessary, according to the strength required. Minnows, pieces of fish, shad-roe, worms, toasted cheese, insects, pieces of meat or liver, chickens offal—any of these baits will attract the cat-fish. You can fish with hand lines, or with a rod, as you may prefer. The proper hook is the Limerick salmon from No. 1 to 5, according to the size of your fish. They do not bite very vigorously, but perform a series of fine nibbles, similar to the bite of an eel. They are plentiful always in mud bottoms, above mill-dams, and in coves of the river. The large ones are often taken by trolling with artificial squid or fly. The time for fishing cat-fish begins in April, and lasts until cold weather.

The Sucker.—There are a great many different species of the sucker, and some of them will not bite or nibble at any bait whatever. The kind that does not bite is sometimes taken with wire slip-noose, but as that is not legitimate sport, we do not deem it necessary to particularize the manner. The regular trout tackle and hooks are used in fishing the sucker everywhere, and worms are the proper bait, though he will bite at shad-roe in the spring season. They suck in the bait, and thus nibble at the hook. They are not very lively when pulled up, and unless cooked immediately their flesh grows soft.

The Flounder.—This is an odd-looking fish, his belly being on one side and his back on the other. Their feeding ground is the

soft mud of the bottom, near to bridge spiles, docks, and other bottom incumbrances, and they are sometimes found on bass grounds. They feed on the spawn of fishes, and on muscles and insects.

The time for fishing the flounder is the spring and fall months. In the summer he may be taken, but his flesh is soft and unwholesome. He will bite at almost anything used in salt water for fish bait, and in fishing him you may use any kind of tackle. A small hook is however necessary—No. 8 being the usual size.

Fishing without Nets, Lines, Spears, Snares, "Bobs," or Bait. The following plan we have known used with great success to catch fish in winter, in Pennsylvania. Where the water was clear and still, say the back water of a dam, it would often freeze hard enough to make good skating and yet the ice would be so clear that the fish could be seen lying at the bottom or lazily moving about. By striking the ice (not too hard) immediately over the fish, a sufficient concussion would be produced to stun the fish. It would immediately turn over and come up to the ice, its white belly showing clearly against the ice below, when we proceeded to cut a hole and take out the fish. A mallet generally was used to strike the ice, as we produced a stunning blow with it without killing the fish, as would be likely to occur were the blow struck with the poll of the ax. On taking the fish home and putting them into water—although some or all would be frozen stiff, quite a number would often revive, and it was to produce this result that the mallet was preferred to strike with.

The art of Stretching and Curing Skins.

The market value of skins are greatly affected by the care used in skinning and curing. We take the following from Newhouse's Trapper's Guide, the best known authority on these matters.

In drying skins it is important that they should be stretched tight like a strained drum head. This can be done after a fashion by simply nailing them flat on a wide board or a barn door. But this method, besides being impracticable on the large scale in the woods (where most skins have to be cured) is objectionable, because it exposes only one side of the pelt to the air. The stretchers that are generally approved and used by good trappers, are of three kinds, adapted to the skins of different classes of

animals, and shall call them the *board-stretcher*, the *bow-stretcher*, and the *hoop-stretcher*, and will describe them, indicating the different animals to which each is adapted.

The Board-Stretcher.—This contrivance is made in the following manner: Prepare a board of bass-wood or other light material, two feet three inches long, three inches and a half wide at one end, and two inches and an eighth at the other, and three eighths of an inch thick. Chamfer it from the centre to the sides almost to an edge. Round and chamfer the small end about an inch up on the sides. Split this board through the center with a knife or saw. Finally, prepare a wedge of the same length and thickness, one inch wide at the large end, and tapering to three eighths of an inch at the small end, to be driven between the halves of the board. This is a stretcher suitable for a mink or a marten. Two larger sizes, with similar proportions, are required for the larger animals. The largest size, suitable for the full grown otter or wolf, should be five feet and a half long, seven inches wide at the large end when fully spread by the wedge, and six inches at the small end. An intermediate size is required for the fisher, raccoon, fox, and some other animals, the proportions of which can be easily figured out.

These stretchers require that the skin of the animal should not be ripped through the belly, but should be stripped off whole. This is done in the following manner: Commence with the knife at the hind feet, and slit down to the vent. Cut around the vent, and strip the skin from the bone of the tail with the help of the thumb nail or a split stick. Make no other slits in the skin, except in the case of the otter, whose tail requires to be split, spread, and tacked on to the board. Peel the skin from the body by drawing it over itself, leaving the fur side inward.

In this condition the skin should be drawn on to the split board, (with the back on one side and the belly on the other) to its utmost length, and fastened with tacks or by notches cut in the edge of the board, and then the wedge should be driven between the two halves. Finally, make all fast by a tack at the root of the tail, and another on the opposite side. The skin is then stretched to its utmost capacity, as a boot-leg is stretched by the shoemaker's "tree," and it may be hung away in the proper place, by a hole in one end of the stretcher, and left to dry.

A modification of this kind of stretcher, often used in curing the skins of the muskrat and other small animals, is a simple board, without split or wedge, three sixteenths of an inch thick, twenty inches long, six inches wide at the large end, and tapering to five and a half inches at six inches from the small end, chamfered and rounded as in the other cases. The animal should be skinned as before directed, and the skin drawn tightly on to the board, and fastened with about four tacks. Sets of these boards, sufficient for a muskrat campaign, can easily be made and transported. They are very light, and take up but little room in packing, thirty-two of them making but six inches in thickness.

The Row Stretcher.—The most common way of treating the muskrat is to cut off its feet with a hatchet; and rip with a knife from between the two teeth in the lower jaw, down the belly, about two inches below where the fore-legs come out. Then the skin is started by cutting around the lips, eyes, and ears, and is stripped over the body, with the fur side inward. Finally a stick of birch, water-beech, iron-wood, hickory, or elm, an inch in diameter at the butt, and three feet and a half long, is bent into the shape of an ox-bow and shoved into the skin, which is drawn tight, and fastened by splitting down a sliver in the bow, and drawing the skin of the lip into it.

This method is too common to be easily abolished, and is tolerable when circumstances make it necessary; but the former method of stretching by a tapering board, in the case of muskrats as well as other small animals, is much the best. Skins treated in that way keep their proper shape, and pack better than those stretched on bows, and in the long run boards are more economical than bows, as a set of them can be used many times, and will last several years; whereas bows are seldom used more than once, being generally broken in taking out.

The Hoop Stretcher.—The skins of large animals, such as the beaver and the bear, are best dried by spreading them, at full size, in a hoop. For this purpose, a stick of hickory or other flexible wood should be cut, long enough to entirely surround the skin when bent. (If a single stick long enough is not at hand, two smaller ones can be spliced together.) The ends should be brought around, lapped, and tied with a string or a withe of

bark. The skin should be taken from the animal by ripping from the lower front teeth to the vent, and peeling around the lips, eyes, and ears, but without ripping up the legs. It should then be placed inside the hoop and fastened at opposite sides, with twine or bark, till all loose parts are taken up, and the whole stretched so that it is nearly round and as tight as a drum-head. When it is dry it may be taken from the hoop, and is ready for packing and transportation.

This is the proper method of treating the skin of the deer. Some prefer it for the wolf and raccoon. In many cases the trapper may take his choice between the hoop and the board method. One or the other of these methods will be found satisfactory for curing all kinds of skins.

Dressing and Tanning Skins and Furs.

Dressing Skins with Fur or Wool on.—The cheapest and readiest as well as the best method of dressing skins for use with the hair or wool on, is to first scrape off all the fat with a knife rather blunt on the edge, so as not to cut holes into the hide, upon a round smooth log. The log for convenience sake should have a couple of legs in one end, like a tressle; the other end should rest upon the ground. After the fat is well cleaned off, take the brains of the animal, or the brains of any other recently killed, and work them thoroughly into the hide. This renders the hide pliable. Then to preserve from the ravages of insects scatter on it some powdered alum and a little saltpeter. If the hair side has become greasy, a little weak lye will take it out. Sheep-skins may be dressed in the same way, though the wool should be cleaned with soapsuds before using the brains. Another way, but more expensive, is to use a paste made of the yolk of eggs and whiting instead of brains, working it in the same way, letting it dry and brushing off the whiting. Then add the powdered alum as before. Deer-skins and even small calf-skins are often *tawed* as the process is called with the hair on for garments. If it is desired to give the deer-skin a yellow color, yellow ocher or chrome yellow may be used in combination with the brains or yolks of eggs and afterwards brushed off.

If it is simply desired to preserve skins until they are sold, it is only necessary to dry them thoroughly. If the weather should

be damp and warm, salt the flesh side slightly with fine salt.

Without the Wool or Hair.—Sheep-skin, deer-skin, dog-skin, calf-skin, &c., for gloves, &c., are also tawed, but the hair must be taken off. The skins are first soaked in warm water, scraped on the flesh side to get off fat, and hung in a warm room until they begin to give a slight smell of hartshorn. The wool or fur then comes off readily. The hair side should now be thoroughly scraped against the hair. The skin is next soaked two or three weeks in weak lime water, changing the water two or three times. Then they are brought out again, scraped smooth and trimmed. Then rinsed in clean water, then soaked in wheat bran and water for two or three weeks. After this they are well stirred around in a pickle of alum, salt and water. Then they are thrown again into the bran and water for two or three days. Then stretched and dried somewhat in a warm room. After this they are soaked in warm water and then worked or trodden on in a trough or pail filled with yolk of eggs, salt, alum, flour and water, beaten to a froth. They are finally stretched and dried in an airy room, and last of all smoothed with a warm smoothing iron. This makes the beautiful leather we see in gloves, military trimmings, &c. The proportions for the egg paste are as follows: 3½ pounds salt, 8 pounds alum, 21 pounds wheat flour and yolks of nine dozen eggs. Make a paste with water, dissolving first the alum and salt. A little of this paste is used as wanted with a great deal of water.

Chamois skin and deer skins not wanted for gloves, are similarly treated up to the point of treating with egg paste. Instead of using this process they are oiled on the hair side with very clean animal oil, rolled into balls and thrown into the trough of a fulling mill, well beaten two or three hours, aired, re-oiled, beaten again and the process repeated a third time. They are then put into a warm room until they begin to give out a decided smell, then scoured in weak lye to take out superfluous grease. Here the intention is merely to get a thick felt-like skin of good color, a nicely grained surface is not required as in gloves. The skins are finally rinsed, wrung ont, stretched and dried, and when nearly dry slightly rub with a smooth, hard round stick.

These are the fine processes. A dried skin oiled so as to become smooth and pliable will retain the hair or wool a consider-

able time. Or it may be made more durable where the color of the flesh side is no object by scraping, washing in soapsuds, and then putting directly into the tan pit. For ordinary purposes, rabbit, squirrel, and other small skins can be efficiently preserved with the hair by the application of powdered alum and fine salt, put on them when fresh, or if not fresh by dampening them first. Squirrel skins when wanted without the hair will tan very well in wheat bran tea, the fat and hair having been previously removed by soaking in lime water and scraping. Old tea leaves afford tannin enough for small skins, but they give a color not nearly so pleasant as bran. Almost any of the barks afford tannin enough for small skins, willow, pine, poplar, hemlock of course, sumach, &c.

Coloring or Dyeing Skins and Furs.

Furs are dyed by dealers, to suit some fashion, to conceal defects, or to pass off inferior furs for better ones.

The best way is to brush the dye over the fur with a good sponge, brushing with the hair. As a matter of course, you can only dye them of a darker color than they are, and retain the handsome lustrous look peculiar to fur. They may be bleached, but the process leaves the fur looking like coarse flax or even hemp.

Blue.—Sulphate of indigo, (soluble indigo, sold by all druggists,) is the readiest and best to get a blue with. Furs are never died blue for sale, for that would be spoiling a white fur, but sheep-skins are. The skin should be dipped several times in a bath of hot alum water, allowed to drain, and then dipped into a solution of sulphate of indigo and water, with a few drops of sulphuric acid added, this gives a pale blue. Aniline blue is very fine, and dyeing with it is very simple. A solution of the color in water is made, a hot solution, and the skin put in all at once, (if a part of the skin is put in first that part will be darkest, so quick is the absorption of these colors.) Fancy sheep-skin mats, are colored blue, red, green, and yellow, and have a ready sale when they are new.

Black.—The best black is obtained by first dyeing the skin a blue. Then boil $\frac{1}{4}$ pound gall nuts, powdered, and one and $\frac{1}{4}$ ounces of logwood, in three gallons of water. If the flesh side

is to be blue, while the fur or wool is another, this decoction must be sponged on. Get the wool or hair thoroughly impregnated with this and then add ¼ pound copperas, to the dye, and go over the fur or wool many times with the sponge. The process above given will answer without previous blueing, but the black is not so brilliant. Another "home made" dye, which will answer for dyeing clothes a black, as well as sheep-skins, is this: just make a bath of eight ounces of bi-chromate of potash, six ounces alum, four ounces fustic, boil in water enough to cover five pounds of yarn, cloth or a single sheep-skin. Make another bath of four pounds of logwood, four ounces each bar wood and fustic, or eight ounces fustic, same amount of boiling water, as last; stir the goods well around in the first bath, keeping the water hot for an hour, then work it in the second bath the same length of time. Take them and wring them; then adding one quarter pound of copperas, to the last bath, put the goods in again, and give them a good stirring. This is a good black dye for wool goods (or fur,) but eot for silks or cottons.

Red.—Furs of course are never dyed red, at least in this country. Sheep-skins might be dyed with madder or cochineal, but in the former case, the skin would of necessity be boiled with the dye, as that is necessary in using madder. Cochineal would be expensive and require much working, while as brilliant *reds* and *purples* may be got from the aniline colors, dissolved in moderately warm water, the skum taken off, and skin dipped. These colors are the cheapest too, as they go very far. But always have the wool as free from grease as possible by working in weak hot lye or hot soapsuds.

Yellow.—Can be got on sheep-skins with black oak bark, (quercitron bark) *old* fustic, annotta, and Persian (also called French) berries. The skin should be previously dipped into a hot bath of alum, cream of tartar or spirit of tin, about two ounces to the gallon. About one half pound of annotta, or a pound of the other articles, are enough for a single skin. If you wish to use fustic, be particular to ask for *old* fustic, as what is known in the trade as *young* fustic, is a different article and gives a different color. There is also now an aniline yellow which works like the other colors.

Green.—Dye first blue as explained above, then pass through

a yellow dye, until you get the shade required. An alum bath, cream of tartar, or spirits of tin, as above, must be used before the blue is given.

Preservation of Furs.—While in use, furs should be occasionally combed. When not wanted, dry them first, then let them cool, and mix among them bitter apples from the druggists, in small muslin bags, sewing them in several folds of linen, carefully turned in at the edges, and kept from damp. Camphor or pepper used in the same manner, will have a similar effect. Well cleaned furs are much less liable to be attacked by moths, than those affording rich repasts of dried flesh, though no furs are absolutely safe without great watchfulness. Wrapping well in good brown paper and keeping in a tight paper box, are all helps to the preservation of furs. Sunshine and fresh air kill the fur and wool moth grub. Therefore taking out the furs occasionally and airing, sunning, and beating them is necessary.

To tan Muskrat skins with the fur on.—First, for soaking, to 10 gallons of cold soft water add 8 parts of wheat bran, ½ pint of old soap, 1 ounce of borax; by adding 2 ounces of sulphuric acid, the soaking may be done in one-half the time. If the hides have not been salted, add a pint of salt. Green hides should not be soaked more than 8 or 10 hours. Dry ones should soak till very soft.

For tan liquor, to 10 gallons warm soft water add ½ bushel bran; stir well and let stand in a warm room till it ferments. Then add slowly 2½ pounds sulphuric acid; stir all the while. Muskrat hides should remain in about 4 hours; then take out and rub with a fleshing knife—an old chopping knife with the edge taken off will do. Then work it over a beam until entirely dry.

Some additional Valuable Miscellaneous Information, useful alike to the Hunter, Trapper and Angler.

Hints to Trappers.—The skins of animals trapped are always valued higher than those shot, as shot not only make holes, but frequently plow along the skin, making furrows, as well as shaving off the fur. To realize the utmost for skins they must be taken care of, and also cleaned and prepared properly. Newhouse gives these general rules derived from experience.

1. Be careful to visit your traps often enough, so that the skin will not have time to get tainted.

2. As soon as possible after the animal is dead and dry, attend to the skinning and curing.

3. Scrape off all superfluous flesh and fat, and be careful not to go so deep as to cut the fibre of the skin.

4. Never dry a skin by the fire or in the sun, but in a cool, shady place, sheltered from rain. If you use a barn door for a stretcher (as boys sometimes do), nail the skin on the inside of the door.

5. Never use "preparations" of any kind in curing skins, nor even wash them in water, but simply stretch and dry them as they are taken from the animal.

To Dress Beaver Skins.—You must rip the skin the same as you would a sheep. Stretch it in all ways as much as possible; then it is to be dressed with equal parts of rock salt and alum dissolved in water, and made about as thick as cream, by stirring in coarse flour. This should be spread on nearly half an inch thick, and scraped off when dry, and repeated if one time is not enough. This same process of dressing applies likewise to otter skins.

To Trap Quail.—A quail trap may be any kind of coop, supported by a figure 4. The spindle of the figure must either be so made as to hold grain, or, what is better, some grains of wheat or buckwheat are strung over a strong thread with the aid of a needle, and tied to the spindle. Quails and prairie hens easily enter a trap when the ground is covered with snow. At other times it is rather difficult to catch them.

To Trap Wild Turkey.—A wild turkey trap is made by first digging a ditch; then over one end is built a rude structure of

logs, covered at the top. The structure should not be tight, but, of course, sufficiently close not to let the birds through. Indian corn is scattered about and in the ditch, and inside of the pen. The turkeys follow up corn in the ditch, and emerge from it on the inside. Once there, the silly birds never think of descending into the ditch, but walk round and round the pen, looking through the chinks of the logs for escape that way. To make all sure, the ditch should end about the centre of the pen, and a bridge of sticks, grass and earth should be built over the ditch, just inside of the pen, and close to the logs; otherwise, in going around the bird might step inside the ditch, and once there, it would follow the light and thereby reach the outside of the pen.

To Catch Muskrats Without Traps.—It is a mystery to many how muskrats, beavers, and other animals, are able to remain so long under water, apparently without breathing, especially in winter. The way they manage is, they take in a good breath at starting, and then remain under water as long as possible. Then they rise up to the ice and breathe out the air in their lungs, which remains in a bubble against the lower part of the ice. The water near the ice is highly charged with oxygen, which it readily imparts to the air breathed out. After a time, this air is taken back in the lungs, and the animal again goes under the water, repeating this process from time to time. In this way they can travel almost any distance, and live almost any length of time under the ice. The hunter takes advantage of this habit of the muskrat in the following manner. When the marshes and ponds where the muskrat abounds are first frozen over, and the ice is thin and clear, on striking into their houses with his hatchet, for the purpose of setting his trap, he frequently sees a whole family plunge into the water and swim away under the ice. Following one for some distance, he sees him come up to recover his breath, in the manner above described. After the animal has breathed against the ice, and before he has time to take his bubble in again, the hunter strikes with his hatchet directly over him, and drives him away from his breath. In this case he drowns in swimming a few rods, and the hunter, cutting a hole in the ice, takes him out.

Bleaching Wool on Tanned Pelts.—Put an old pot or other iron

vessel in the bottom of a hogshead, and in the vessel a roll of brimstone. Fasten near the top a stick or two to place the skin on. The wool must be wet when hung on the sticks. Heat an old iron red hot, or take live coals to start the brimstone. When it is burning briskly, cover the hogshead tight to keep the smoke in. If not white enough, repeat the process.

The Esquimaux mode of tanning is very simple, and the material employed the cheapest and most accessible of any used in the art, viz: the urine of man and beast. The skins are prepared in the fur, and softened and tanned in urine, which is usually kept in tubs in the porches of their huts, for use in dressing deer, seal and other skins. They show great skill in the preparation of whale, seal and deer skins, and these, on the whole, are equal to the best oil skins made in England. It imparts to them firmness and durability, and makes them water-proof. The boots worn by the Esquimaux are generally made from seal or walrus hides, and resist the encroachments of water.

Hawk and Owl Traps.—To catch hawks or owls, take a pole 20 feet long, to be set a short distance from the house or barn or on the poultry house. Split the top so as to admit the base of a common steel trap, which should be made fast. When both trap and pole are set you may be sure of game of some kind. These birds naturally light on high objects such as dead branches of trees or tops of stacks, and one should use judgment about the place where he puts the traps. An open field near the chicken yard is probably the best.

Domestic Manufacture of Furs.—The skins of raccoons, minks, muskrats, rabbits, foxes, deer, cats, dogs, woodchucks and skunks are all valuable. Handsome robes may be made from the skins of the last two animals, and the writer has seen fur coats made from the skins of woodchucks, well tanned, dyed and trimmed, which were elegant as well as comfortable, and no one but a connoisseur would be able to guess their origin. Of the finer and nicer furs, beautiful collars, muffs, cuffs, caps, gloves and trimmings may be made, with a little ingenuity and perseverance; and who would not feel a greater satisfaction in wearing a nice article, from the fact that it was something of their own manufacture—a product of their own taste and genius?

Very handsome floor mats are made by tanning sheep pelts, and dyeing them some bright color, which is done with very little trouble; the art of dyeing is now so familiar to almost every household. Furs may be dyed as easily as woolen goods, notwithstanding the impression that it is an art known only to the trade. Any dye that will color woolens will also dye furs, only care must be taken not to have the dye too hot, or the texture of the skin will be injured.

The mode of tanning usually followed by city furriers, is to rub the skins well with rancid butter, then tread them thoroughly in a tub or vat, after which a large quantity of sawdust is mixed with them, and the process of treading continued until all the grease is absorbed, when they are finished off by beating, working and rubbing with chalk and potter's clay, whipping and brushing. An old trapper practised this method with small skins, first washing with a suds of soap and sal-soda to free them from grease, then rinsing in clear water to cleanse them from the suds, then rubbing as dry as possible, after which they were put in a mixture of two ounces of salt to a quart of water, added to three quarts of milk or bran water containing one ounce of best sulphuric acid, and stirred briskly for forty or fifty minutes; from this they are taken dripping into a strong solution of sal-soda and stirred till they will no longer foam; they are then hung to dry, when they are very soft and pliable. A very good and simple process in use among farmers is to sprinkle the flesh side, after scraping it well, with equal parts of pulverized alum and salt, or washing it well with a strong solution of the same, then folding the flesh side together, and rolling it compactly, in which state it should remain for eight or ten days; then it is opened, sprinkled with bran or sawdust to absorb the moisture, and rolled up again, and after remaining 24 hours, the process is completed by a thorough rubbing and manipulation, on which the pliability depends. Skins, when taken off, should be freed from grease or flesh, by thorough scraping, when they may be dried, and left to await the leisure of the owner. Previous to tanning they must be well soaked and wrung dry.

It is no extravagance to assert that every farmer's family may furnish their own fur collars, gloves, robes, and other articles of

dress and ornament, with trifling expense, from the resources within their own reach; but from want of more knowledge on the subject, valuable skins are wasted or disposed of for a mere fraction of their real value, and articles of apparel that should have been made from them are bought at extravagant prices of fur dealers.

Indian Mode of Tanning Buffalo Skins.—The hard and incessant labor that is necessary to properly "Indian tan" a robe is not easy to realize unless one may see the work go on day by day from the first step, which is to spread out the pelt or undressed hide upon the ground, where it is pinned fast by means of wooden pins driven through little cuts in the edge of the robe, into the earth. The flesh side of the robe, being uppermost, is then worked over by two, and sometimes three, squaws. The tools used are often very rude, some being simply provided with sharp stones or buffalo bones. Others, more wealthy, have a something that much resembles a drawing-knife or shave of the cooper. The work in hand is to free the hide from every particle of flesh, and to reduce the thickness of the robe nearly one-half, and sometimes even more. This fleshing, as it is termed, having been thoroughly accomplished, the hide is thoroughly moistened with water in which the buffalo brains have been steeped. For ten days the hide is kept damp with this brain water. Once each day the hide is taken up, and every portion of it rubbed and rerubbed by the squaws, who do not have recourse to anything like a rubbing board, but use their hands until it would seem as if the skin would soon be worn off. There seems to be no definite rule as to the length of time which the robe shall occupy in curing. The squaw labors until the hide becomes a robe, which may require the work of one week or two, sometimes even more; but I think that ten days may be considered as the average time which it takes to properly cure a robe.

To Dress Deer Skins.—Put the skin into the liquid while warm, viz: eight quarts rain water to one pint soft soap. Warm it. Then punch the hide, or work it with a soft stick, and let it lay one day. It is then to be taken out and wrung—rolled between two logs—or even a wringing machine will be better. Then stretch it until it is dry, in the sun is best, or by a hot fire.

Then oil it thoroughly with any oil convenient. It should then be treated to the same bath of suds, (heated quite warm), and lay another day. Then pull it out and dry as before. Any oil will do, but good fresh butter is better than anything else. When the skin is dry rub it with ochre, which will give it a splendid yellow color.

Tanning and Buffing for Deer Skin Gloves.—For each skin, take a bucket of water, and put into it 1 quart of lime; let the skin or skins lay in from 3 to 4 days; then rinse in clean water, hair and grain; then soak them in cold water to get out the glue; now scour or pound in good soap suds for half an hour; after which take white vitriol, alum and salt, one table-spoon of each to a skin; this will be dissolved in sufficient water to cover the skin and remain in it for 24 hours; wring out as dry as convenient, and spread on with a brush ½ pint of currier's oil, and hang in the sun about two days; after which you will scour out the oil with soap suds, and hang out again until perfectly dry; then pull and work them until they are soft; and if a reasonable time does not make them soft, scour out in suds again as before, until complete. The oil may be saved by pouring or taking it from the top of the suds, if left standing a short time. The buff color is given by spreading yellow ochre evenly over the surface of the skin, when finished, rubbing it in well with a brush.

Dyeing for Buckskin, (Buff.)—5 parts of whiting to 2 parts of ochre (yellow), and mix them with water to a paste; make into cakes and dry. When a dressed skin is dry, rub one of the balls over the surface; rub the powder in. Take a piece of sand-paper and raise a nap on the leather by going over with it. (*Black.*)—Take clear logwood; after it is dry use coperas water to blacken it. Be careful and not use too much coperas. (*Dark Brown.*)—5 pounds of oak bark; 4 pounds of fustic; 14 ounces of logwood. Use alum water (strong) to make it strike in. (*Drab.*)—Mix blue clay with soft soap; add blue vitriol to shade the color. It can be made any shade you wish.

Dyeing for Morocco and Sheep Leather.—The following colors may be imparted to leather, according to the various uses for which it is intended. (*Blue.*)—Blue is given by steeping the sub-

ject a day in urine and indigo, then boiling it with alum; or it may be given by tempering the indigo with red wine, and washing the skins therewith. (*Another.*)—Boil elderberries or dwarf-elder, then smear and wash the skins therewith and wring them out; then boil the elderberries as before in a solution of alum water, and wet the skins in the same manner once or twice; dry them, and they will be very blue. (*Red.*)—Red is given by washing the skin and laying them two hours in galls, then wringing them out, dipping them in a liquor made with ligustrum, alum and verdigris; in water, and lastly in a dye made of Brazil-wood boiled with lye. (*Purple.*)—Purple is given by wetting the skins with a solution of roche alum in warm water, and when dry, again rubbing them with the hand with a decoction of logwood in cold water. (*Green.*)—Green is given by smearing the skin with sap-green and alum-water, boiled. (*Dark Green.*)—Dark green is given with steel-filings and sal ammoniac, steeped in urine till soft, then smeared over the skin, which is to be dried in the shade. (*Yellow.*)—Yellow is given by smearing the skin over with aloes and linseed oil, dissolved and strained, or by infusing it in weld. (*Light Orange.*)—Orange color is given by smearing it with fustic berries boiled in alum-water, or, for a deep orange, with turmeric. (*Sky-color.*)—Sky-color is given with indigo steeped in boiling water, and the next morning warmed and smeared over the skin.

Operation of Tanning.—The first operation is to soak the hide, as no hide can be properly tanned unless it has been soaked and broken on a fleshing beam. If the hide has not been salted add a little salt and soak it in soft water. In order to be thoroughly soaked, green hides should remain in this liquor from 9 to 12 days; of course the time varies with the thickness of the hide. The following liquor is used to remove hair or wool, viz: 10 gallons cold water (soft), 8 quarts slacked lime, and same quantity of wood ashes. Soak until the hair or wool will pull off easily.

As it frequently happens it is desirable to cure the hide and keep the hair clean, the following paste should be made, viz: equal parts of lime and hard-wood ashes, (lime should be slacked,) and made into a paste with soft water. This should be spread on the flesh side of the hide and the skin rolled up, flesh side in,

and placed in a tub, just covering it with water. It should remain 10 days, or until the hair will pull out easily, then scrape off with a knife.

To Deoderise Skunk Skins.—To deoderise skunk skins or articles for clothing scented, hold them over a fire of red cedar boughs, and sprinkle with chloride of lime; or wrap them in green hemlock boughs when they are to be had, and in 24 hours they will be cleansed.

How to Shoot Snipe.—To the beginner no bird is more puzzling, and, therefore, more difficult to shoot. Its flight is most uncertain, most variable, and most irregular—rising at one time as evenly as a lark, and flying close to the ground with scarcely the slightest deviation from a straight line; at another, springing from the ground as if fired from a gun, and then flying in a zig-zag course to the right or left, and, indeed, in every direction; and sometimes, again, rising to a great height, and then going straight away with the rapidity of lightning. And yet, with all these apparent difficulties, when the knack is once acquired, it becomes comparatively easy—indeed, is reduced almost to a certainty. The great art in this kind of shooting is coolness, and to avoid too much hurry. And, in this, as in every other kind of shooting, the first sight is the best; the moment you are "well on" your bird, the trigger should be pulled. In cross shots, fire well before your bird. Contrary to the usual practice, you should always walk down wind; the reason for this is that snipe always rise against it. Sometimes snipe are very wild, and at others will lie until they are almost trodden upon. If there be much wind, your best chance is to "down with them" as soon as they rise from the ground, or you have little hope of getting a bag.

Preservatives for Skins.—The best material for the preservation of skins of animals consists of powdered arsenious acid, or the common arsenic of the shops. This may be used in two ways: either applied in dry powder on the moist skin, or, still better, mixed with alcohol or water to the consistency of molasses, and put on with a brush. Some camphor may be added to the alcoholic solution, and a little strychnine will undoubtedly increase its efficacy. There are no satisfactory substitutes for arsenic, but, in its entire absence, corrosive sublimate, camphor,

alum, etc., may be employed. Many persons prefer the arsenical soap to the pure arsenic. This is composed of the following ingredients. Arsenic, 1 ounce; white soap, 1 ounce; carbonate of potash, 1 dram; water, 6 drams; camphor, 2 drams. Cut the soap into thin slices, and melt over a slow fire with the water, stirring it continually; when dissolved, remove from the fire, and add the potash and arsenic by degrees; dissolve the camphor in a little alcohol, and when the mixture is nearly cold, stir it in.

The proper materials for stuffing out skins will depend much upon the size of the animal. For small birds and quadrupeds, cotton will be found most convenient; for the larger, tow; for those still larger, dry grass, straw, sawdust, bran, or other vegetable substances, may be used. Whatever substance be used, care must be taken to have it perfectly dry. Under no circumstances should animal matter, as hair, wool, or feathers, be employed.

The bills and loral region, as well as the legs and feet of birds, and the ears, lips and toes of mammels, may, as most exposed to the ravages of insects, be washed with an alcoholic solution of strychnine applied with a brush to the dried skin; this will be an almost certain safeguard against injury.

Fishing with Natural Fly.—This consists in fishing with the living flies, grasshoppers, etc., which are found on the banks of the rivers or lakes where you are fishing. It is practised with a long rod, running tackle, and fine line. When learning this system of angling, begin by fishing close under the banks, gradually increasing your distance until you can throw your live bait across the stream, screening yourself behind a tree, a bush, or a cluster of weeds, otherwise you will not have the satisfaction of lifting a single fish out of the water. In rivers where immense quantities of weeds grow in the summer, so as almost to check the current, you must fish where the stream runs most rapidly, taking care that in throwing your line into those parts you do not entangle it among the weeds. Draw out only as much line as will let the fly touch the surface, and if the wind is at your back, it will be of no material service to you in carrying the fly lightly over the water. In such places the water is generally still, and your bait must, if possible, be dropped with no more

noise than the living fly would make if it fell into the water Keep the top of your rod a little elevated, and frequently raise and depress it and move it to and fro very gently, in order that the fly by its shifting about may deceive the fish and tempt them to make a bite. The instant your bait is taken, strike smartly, and if the fish is not so large as to overstrain and snap your tackle, haul it out immediately, as you may scare away many while trying to secure one. There are very many baits which may be used with success in natural fly fishing, of which, however, we shall content ourselves with enumerating some of the most usual and useful.

Wasps, hornets and bumble bees are esteemed good baits for dace, eels, roach, bream and chub; they should be dried in an oven over the fire, and if not overdone, they will keep a long while.

How to Select Furs—In purchasing furs, a sure test of what dealers call a "prime" fur is the length and density of the down next the skin; this can be readily determined by blowing a brisk current of air from the mouth against the set of fur. If the fibers open readily, exposing the skin to the view, reject the article; but if the down is so dense that the breath cannot penetrate it, or at most shows but a small portion of the skin, the article may be accepted.

To Clean Furs.—Strip the fur articles of their stuffing and binding, and lay them as much as possible in a flat position. They must then be subjected to a very brisk brushing, with a stiff clothes-brush; after this, any moth-eaten parts must be cut out, and be neatly replaced by new bits of fur to match. Sable, chinchilla, squirrel, fitch, etc., should be treated as follows: warm a quantity of new bran in a pan, taking care that it does not burn, to prevent which it must be actively stirred. When well warmed, rub it thoroughly into the fur with the hand. Repeat this two or three times; then shake the fur, and give it another sharp brushing until free from dust. White furs, ermine, etc., may be cleaned as follows: lay the fur on the table, and rub it well with bran made moist with warm water; rub until quite dry, and afterward with dry bran. The wet bran should be put on with flannel, and the dry with a piece of book-muslin. The

light furs, in addition to the above, should be well rubbed with magnesia, or a piece of book-muslin after the bran process. Furs are usually much improved by stretching, which may be managed as follows: to a pint of soft water add three ounces of salt; dissolve; with this solution sponge the inside of the skin (taking care not to wet the fur) until it becomes thoroughly saturated; then lay it carefully on a board with the fur side downward, in its natural disposition, then stretch as much as it will bear, to the required shape, and fasten with small tacks. The drying may be quickened by placing the skin a little distance from the fire or stove.

Fishing with Artificial Fly.—Artificial fly fishing consists in the use of imitations of these flies and of other fancy flies, and is unquestionably the most scientific mode of angling, requiring great tact and practice to make the flies with neatness and to use them successfully, and calling forth as it does so much more skill than the ordinary method of bottom fishing, it merits its superior reputation. It possesses many advantages over bottom fishing, but at the same time it has its disadvantages; it is much more cleanly in its preparations, inasmuch as it does not require the angler to grub for clay and work up a quantity of ground baits, and is not so toilsome in its practice, for the only encumbrances which the fly fisher has, are simply a light rod, a book of flies, and whatever fish he may chance to catch; but there are several kinds of fish which will not rise at a fly, and even those that do will not be lured from their quiet retreat during very wet or cold weather. It would be as well if the young angler could go out for some little time with an old experienced hand, to observe and imitate his movements as closely as possible.

To Prepare Sheep Skins for Mats.—Make a strong lather with hot water and let it stand till cold; wash the fresh skin in it, carefully squeezing out all the dirt from the wool; wash it in cold water till all the soap is taken out. Dissolve a pound each of salt and alum in two gallons of hot water, and put the skin into a tub sufficient to cover it; let it soak for twelve hours, and hang it over a pole to drain. When well drained stretch it carefully on a board to dry, and stretch several times while drying Before it is quite dry, sprinkle on the flesh side one ounce each

of finely pulverized alum and saltpetre, rubbing it in well. Try if the wool be firm on the skin; if not, let it remain a day or two, then rub again with alum; fold the flesh sides together and hang in the shade for two or three days, turning them over each day till quite dry. Scrape the flesh side with a blunt knife, and rub it with pumice or rotten stone.

To Tan Sheep Skins.—Sheep skins, which are used for a variety of purposes, such as gloves, book-covers, etc., and which when dyed, are converted into mock Morocco leather, are dressed as follows: They are first to be soaked in water and handled, to separate all impurities, which may be scraped off by a blunt knife on a beam. They are then to be hung up in a close, warm room to putrefy. This putrefaction loosens the wool, and causes the exudation of an oily and slimy matter, all which are to be removed by the knife. The skins are now to be steeped in milk of lime, to harden and thicken; here they remain for 1 month or 6 weeks, according to circumstances, and when taken out, they are to be smoothed on the fleshy side with a sharp knife. They are now to be steeped in a bath of bran and water, where they undergo a partial fermentation, and become thinner in their substance.

The skins, which are now called pelts, are to be immersed in a solution of alum and common salt in water; in the proportion of 120 skins to 3 lbs. of alum and 5 lbs. of salt. They are to be much agitated in this compound saline bath, in order to become firm and tough. From this bath they are to be removed to another, composed of bran and water, where they remain until quite pliant by a slight fermentation. To give their upper surface a gloss, they are to be trodden in a wooden tub, with a solution of yolks of eggs in water, previously well beaten up. When this solution has become transparent, it is a proof that the skins have absorbed the glazing matter. The pelt may now be said to be converted into leather, which is to be drained from moisture, hung upon hooks in a warm apartment to dry, and smoothed over with warm hand irons.

To Trap Young Mink.—Mink Breeding.—Adult minks are almost untamable, but young ones readily submit to handling, and are easily domesticated. The time to secure young minks is in May and June, when they begin to run with their dams. The

streams must be quietly watched for mink trails, and these tracked to the nest. When they leave the hole the old one may be shot, and the young ones secured, or they may be dug out. Those who own a breeding stock of minks ask high prices for them; but trappers represent to us that it is an easy matter to get the wild young ones. *Habits.*—A successful breeder says that he does not attempt to tame the wild mink, but only aims to supply for it in a small space all the necessities of its natural instincts. He says the mating season commences about the first of March, and lasts two weeks, never varying much from that date.

The female carries her young about six weeks. In the mink-ery, where diet, water, temperature, etc., are similar with each animal, there is so little difference in the time of mating and time of bearing young in different animals, that five out of six litters dropped last spring, were born within twelve hours of each other. The young are blind from four to five weeks, but are very active, and playful as kittens. The mother weans them at from eight to ten weeks old. At four weeks the mother begins to feed them meat; this they learn to suck before they have teeth to eat it.

The nests in which the young are born are lined by the mother with some soft material, and are made in the hollow of some old stump, or between the projecting roots of some old tree, and always where it is perfectly dry. The nest is located near pure running water, which the mother visits twice every twenty-four hours. She feeds her young on frogs, fish, birds, mice, crabs, etc., etc. The mink is from birth a pattern of neatness and cleanliness, and as soon as a nest begins to get foul and offensive, she takes one of the young in her mouth, and depositing it in a clean, suitable place, builds a nest about it, and then brings the balance of the litter. She feeds and cares for them until they are three and a-half or four months old. When the young are weaned, about the 10th of July, she builds her nest near the water, in which the young soon learn to play. There are usually four in a litter, though the number ranges from two to six. Towards fall the mother separates them into pairs. One pair—or if the number be odd, the odd one—is left in the nest; the other

pair or pairs, she places often half a mile from each other, and then seeks new quarters for herself.

The young soon separate, and each one catches his own frogs, etc. They do not pair, but the male is a sort of rover and free-lover. Minks are unsociable, petulant, vicious in play, savage in war. Late in the fall they establish regular runaways from one stream to another, and usually under brush, fallen trees, weeds, swale, and under banks—anywhere, in fact, where they can avoid the sunshine and escape the chances of observation. The mink is a sure prophet, and just before hard winter begins, he lays by a store of food for the winter in safe places, near his winter nests, of which he has several. As the snows fall he burrows under the snow, where he remains until about February, when his supply of food is exhausted and he is forced to seek further for food.

Management of.—Mink being by nature solitary, wandering creatures, being seldom seen in company except during the breeding season, are, therefore, impossible to be reared successfully, if large numbers are kept constantly together, therefore their inclosure should be a large one. The male and female should be permitted to be together frequently from the middle of February until the middle of March. At all other times keep them entirely separate. The young mink make their appearance about the first of May. When wild in the woods they will seldom vary five days from this time; but when kept in confinement there is greater variation. About this season they should have plenty of fine hay, which they will carry into their boxes to make nests. A box three or four feet long and 18 inches wide is the shape they prefer; it should be placed as far as possible from the water, to prevent the mink from carrying water and mud into it.

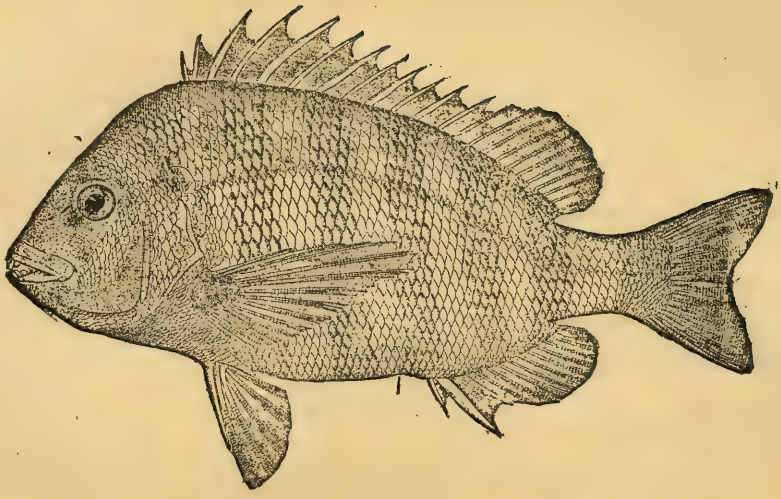
The young mink when first born are small and delicate, destitute of any kind of fur, and much resembling young rats. If the old mink is tame, the young ones may be taken out of the nest and handled when they are three weeks old. They will soon learn to drink milk, and may be fed every day. At five weeks old they may be taken from the mother and put into a pen by themselves, when they will soon become very playful and pretty,

and make much better mothers than they would if allowed to run with the old ones.

The shelter should be in the shape of a long box, 5 or 6 feet wide, and 3 or 4 feet high, set upon legs, and with a good floor and roof. Divide it into separate apartments, 6 feet long, (or longer would be better,) the front of each apartment to be furnished with a swinging door of strong wire screen, with the hinges at the top, and a button or some kind of fastener at the bottom. A trough, 6 inches square, made by nailing three boards together, should run the whole length of the pen on the back side; one end of the trough should be made several inches lower than the other, so that the water can be drawn off. With this arrangement the water can be turned in at one end of the trough, and drawn off and changed as often as desired. The lower end of the trough should be a little deeper than the other, to prevent the water from running over. Each apartment is furnished with a box 3 feet long and 18 inches wide. On one side of the box and near one end is made a round hole, 2½ inches in diameter, and provided with a sliding cover, so that by means of a stick it can be opened or closed from the outside. This is so the mink can be shut up when the pen is being cleaned out. On the top of the box and at the other end should be a door large enough to put in hay for the nest and take out the young. It is necessary that they have abundance of pure, soft water, fresh air, desirable shade, and plenty of exercise. These conditions secure to the mink a good quality of dark fur, and good health. Brush, weeds, etc,, are allowed to grow in the yard, but not near enough the wall to admit of their climbing up and out.

In addition to the above directions for breeding mink, we give the following experience of a gentleman in Vermont: I purchased one female and her litter of five, two males and four females in all, and constructed a building of rough boards, 10 by 4 feet, for a minkery. It had a floor tight enough to prevent the escape of the animals; was properly ventilated, and divided into six apartments, one of which is an ante-room into which to step from the outside and close the door. Water is supplied by a lead pipe running in at one side, through all the rooms, and out at the other into a trough where small fish are kept, and occasionally

given to the minks. They were kept together until December the 18th, when the males were put in an apartment by themselves. On the 10th of March each male was put in with a female, each pair separate, and after a couple of days, one of the males was put in with another female, and finally with the third, They were separated about the 1st of April, each female being kept alone and supplied with a suitable box, with warm material for a nest. When it was supposed they were about to bring forth their young, they were disturbed as little as possible; anything to excite them at this time, should be avoided, for when irritated, they will sometimes eat their young. The first female put with the perfect male, brought forth seven, one of which disappeared after they began to crawl around out of their nest. The other two females had each a pair, all of which (but the one mentioned) are now alive, fine, fat, sleek fellows, and fully grown. They are very easily kept, being fed once a day upon warm milk with wheat bread crumbs—a quart sufficing for the whole lot, and once upon fresh meat, care being taken not to over-feed. Any kind of meat and offal that is not too fat will answer. They are very fond of beef liver, chickens' heads and entrails, woodchucks, (being careful not to give them the gall on the liver, which is poisonous,) rats, mice, etc. They are more easily cared for than one hog, and much more cheaply kept. Nothing was paid out for meat for them until after 1st July, when a contract was made with a butcher to leave a bullock's head once a week. I am confident that the increase of the minkery would have been fully one-third more if both the males had been perfect. I intend to keep them in pairs hereafter. They are not easily handled, but struggle when caught against their will, and exude the thick fetid substance from glands near the vent. They will bite severely, but can be handled safely with thick buckskin gloves.



THE SHEEPSHEAD.

TOOLS FOR FISHING.

Rods.

FISHING rods are now usually made from the bamboo, the Calcutta reed, or of ash wood, as it is necessary they should be made light, tough, and pliable. The butts are frequently made of maple, with bored bottom; and this butt will outlast several tops. Rods for travellers are made in joints, so as to be easily transported. The cost of rods at the tackle stores is $1 50 and $2 50 up to $5 for ordinary ones; and $10, $15, $20, and even as high as $50 for the best and most scientific articles. Some of them are made to be used as a walking canes until needed for sport. A perfect rod should gradually taper from end to end, be tight in all its joints, and be equally and uniformly pliable, not bending in one place more than another. The different lengths of rods required in fishing are mentioned in describing the tackle used in catching different fish. It is therefore only necessary to say that they vary from 12 to 20 feet in length.

Reels.

Some sportsmen do not consider reels necessary but this is because they have either never used them, or never had a good article. American made reels

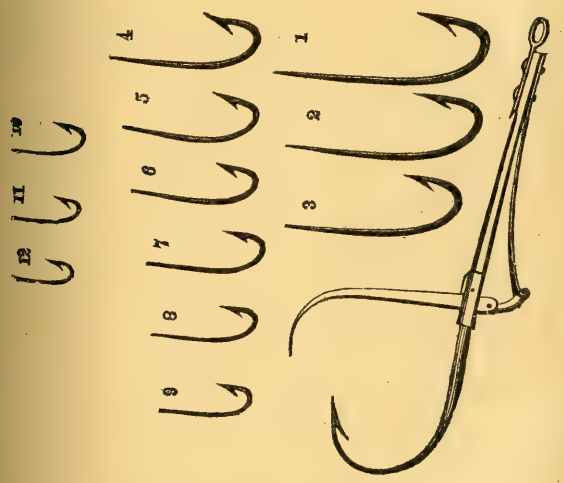
are now considered the best in the market, particularly for taking large fish. The smaller English reel will do very well for trout fishing. There are two kinds, viz.: the plain reel, and the multiplying reel. Some prefer the former; but the multiplying reel saves a good deal of time, and is easily worked when you get accustomed to it. Reels are made of brass, and of German silver. Either article is as good as the other.

Lines.

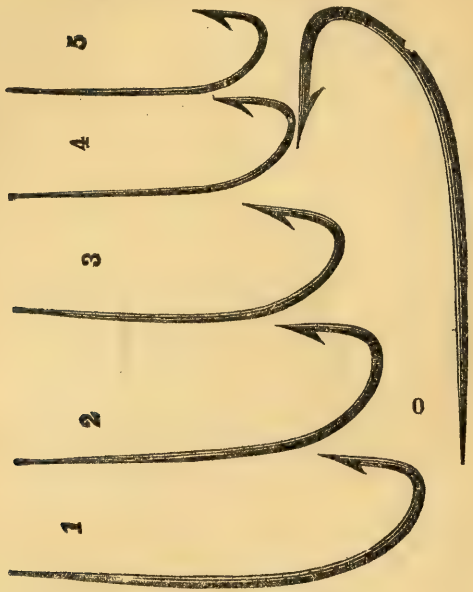
Lines are made of India grass, of silk alone, silk and hair, of hemp, of flax, and of cotton. Gut lines are also made, but are not easily managed. The best trout lines are made of India grass, though silk, or silk and hair are frequently used in trout fishing. Trout lines are usually from eight to eighteen yards long, and of various degrees of fineness according to the size of the fish angled for, or clearness of the stream. Salmon, bass, and pickerel lines are made from hemp, flax, silk, grass or hair, and vary in length from 30 to 150 yards. Cotton and hemp lines are made for trolling purposes, and for fishing sea-fish generally. The length of these will vary according to the condition or depth of your fishing grounds. The size of all lines should vary according to the state of the streams or size of your fish. Clear streams require as small lines as will answer the purpose. If you have a good multiplying reel, the line should be as long as the reel will carry.

Hooks.

The old Kirby hook is now generally superseded by the Limerick, which is considered the best fish hook made. We subjoin the different sizes and numbers, which will be hereafter referred to in these pages. In cases where we have recommended the Kirby, you will find the size of that hook to correspond exactly with the numbers of the Limerick. The trout hook is used for the small fry, while the salmon hook is attached to the tackle for catching that fish, and also other large lake and river fish, weak-fish, &c.



LIMERICK TROUT HOOK.



LIMERICK SALMON HOOK.

Besides the regular Limerick and Kirby hooks, whose sizes and numbers correspond with the foregoing plates, we have given on the cover of this work a plate of "black-fish hooks," of different patterns and sizes for bottom fishing—also pickerel hooks, the snap-spring hook, &c., with numbers and explanations. You should examine the point and barb of each hook to see that it is perfect, and file it if it is not. Always have a small file with you.

Sinkers and Swivels.

The ordinary plain sinker is made of lead, shaped round like a pipe-stem, and swelling out in the middle. There are loops of brass wire on either end to attach the line. The weight is from a quarter of an ounce for trout fishing up to a couple of pounds or more for sea bass and porgies. The swivel sinker is similar to the plain one, except that instead of loops, there are swivels on each end to attach the line. This is a decided improvement, as it prevents the line from twisting and tangling. In trolling, swivel sinkers are indispensable. The slide sinker, for bottom fishing, is a leaden tube which allows the line to slip through it, when the fish bites. This is an excellent arrangement, inasmuch as you feel the smallest bite, whereas in the other case the fish must first move the sinker before you feel him. Split shot are sometimes put on trout lines in place of a sinker. Independent swivels are useful in some kinds of fishing to prevent the entanglement of your line.

Leaders.

The silk-worm gut is almost imperceptible in water, and for leaders therefore is the best possible substance. The gut is taken from the worm just as it is ready to spin, and its size varies with the size of the insect, some being as fine as a horse-hair, and others ten times that size. The strands are usually from nine inches to two feet in length, and are just suited to leaders. The tackle stores supply these leaders,

with hooks fastened to them, and with loops ready to attach to your line. The best gut leaders are of Spanish manufacture. Leaders of twisted horse-hair, or of grass, are used when gut cannot be obtained, but they should be made as light as possible.

Floats.

A very light float should be used for trout if you use any at all. It is made from quills or cork. For pickerel, salmon, bass, &c., you should get floats made from hollow red cedar, which are very light and appropriate. Cork will answer if you cannot procure the cedar.

Other Tools.

Nets for landing your fish, nets for carrying bait, gaff-hooks, and clearing rings are among the "tools" of the angler, and can be procured at the tackle stores. They are sometimes very useful. The gaff-hook is used to land your fish in cases where the landing net is impracticable. It is a large hook fastened to a hickory handle. The clearing ring is a stout ring to encircle your line, and send down and clear it. It opens with a hinge, and weighs five to eight ounces.

Baits.

The common angle-worm is a universal bait for fresh water angling. They grow almost everywhere except in sandy soils. The common white grub is

also used successfully in trout fishing. They are found in fresh ploughed earth, and under old stumps, decaying foliage, &c. The grasshopper is also good for trout in his season. The trout or salmon spawn will attract trout quicker than any other possible bait, but it is not always to be had. Catapillars, flies, locusts, beetles, &c., are good for trout.

Live bait consists of the minnow, the shiner, (or mullet,) the gold-fish, and other small fish. Ponds of these fish are kept by those who furnish baits, and by some habitual sportsmen.

The frog is an excellent bait for pickerel. They are sometimes used whole, but in cases where you use the hind legs only, they should be skinned.

For salt-water fishing, the shrimp is the leading bait. The shedder-crab, in its season, is most excellent, particularly for striped bass. The soft-shell clam, cut in small pieces, is a good bait for many kinds of sea fish. The horse-mackerel, or small blue fish is an excellent bait. Where the tide runs swift, use the tail, leaving on the fins.

Preparing Baits.—We have before said that salmon-roe was an excellent bait for trout. The roe of large trout or salmon-trout is just as good. These are tempting baits for many other fresh water fish besides the trout. Old fishermen preserve it as follows: First put it in warm water, not hot enough to scald much—then separate the membranous films—rinse it well in cold water and hang it up to dry The next day salt it with two ounces of salt and a

quarter of an ounce of saltpetre to the pound of roe. Let it stand another day and then spread it to dry. When it becomes stiff put it in small pots, pouring over each some melted mutton tallow. You can then use a pot of preparation as you may want it for bait It is excellent for trout, and indeed for almost any fry in fresh water.

Angle-worms are thus prepared: Take a lot of common moss and wash it in clean water, press it until nearly dry, then put it in an earthen pot with your worms. In a few days the worms will look exceedingly bright, and be tough and active. If you wish to preserve them longer, you have only to take out the moss, wash it, sponge it, and return it to the pot. Repeat this process every three or four days and your worms will be in excellent condition as long as you desire to keep them.

Pastes for Bait.—The English are famous for paste baits, some of which are made as follows: Shrimp paste is made from shrimps, being prepared in every respect similar to the salmon-roe, before given. Wheat, rye, barley and other grains, soaked in water, and then boiled in milk, are good baits for small fish in still water. Soft bread and honey, kneaded together, is a good bait. Grated cheese worked into paste with soft bread, honey, and saffron, is frequently used. Tallow chandlers' scraps, fresh scalded to separate the slimy particles—these particles are then mixed with clay and bran, and are a good ground bait. It is only good when fresh made.

SALMON.

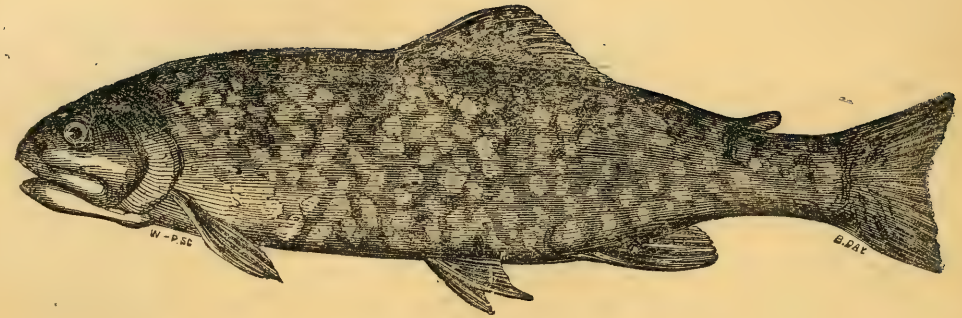
FISHING.

The Salmon.

THIS most delicious of fish sometimes grows to an immense size for a frequenter of fresh water. Some isolated specimens in Scotland are said to have attained from seventy to eighty pounds. The usual length of the salmon, however, is from two to three and a half feet, and its weight varies from twenty to thirty-two pounds. They are of a silvery gray color on the sides, spotted with irregular reddish spots—the belly is white, and the back a dark blue. When first taken from the water its colors are beautiful. Salmon begin to run up certain Northern rivers in April, and stay there until the latter end of July, when they return to the sea. It is while thus running that they are taken by anglers and salmon fishermen. They deposit their spawn at the extreme point that they reach on the river, and by the time they return, the young fry are ready to return with them. The same young ones follow their parents up the river the year following, having grown to be about six inches in length. At the end of the second year they weigh from five to seven pounds, and it takes them six years to attain their growth.

The salmon, like the trout, is timid and easily frightened. When they become alarmed they move very rapidly in the water, and go a great distance without stopping. It is, therefore, necessary to be extremely cautious in fishing them, and requires skill and perseverence. The most wary and scientific anglers have their patience tried in taking this fish, whose instinct leads it to astonishingly artful and singular efforts to escape. The feeding grounds of the salmon are swift streams, and deep lakes, with gravelly and pebbly bottoms, where there are easy outlets to the sea. The time for fishing them is early in the morning or late in the afternoon, and they may be taken from May until August. In the first of the season, worms, small fish, or shrimp is the usual bait; but in July and August they are partial to the fly.

The tackle used for salmon should combine strength with imperceptibility. A large sized reel is necessary, with some two hundred yards of line made of silk and hair combined, or a grass line is sometimes used. The leader should be four or five feet long, made of twisted gut, and with a swivel sinker, or a swivel alone in fly fishing. The rod should be fifteen to eighteen feet long, and elastic at the end. The proper hook for worm and live bait is the Kirby and Limerick pattern, Nos. 0 to 4; and Nos. 0 to 3 in fly fishing. Fishing with artificial flies is often very successful, the flies being made of gray and gaudy feathers. They are sold at all the fishing tackle stores in New York.



BROOK TROUT.

Spearing the salmon is practised at night, with torches, by professional fishermen, but seldom by sportsmen or amateurs.

The Trout.

TROUT, which are caught in the numerous running streams of the United States, vary in color, appearance and size with the quality of the soil pertaining to the streams they inhabit. They generally have red and yellow spots on their sides—concave tail, and belly tinged with orange red. They have large eyes, a wide mouth, sharp teeth, and scaleless skin. The usual weight of brook trout is from one to four pounds. Another species caught in New England are dotted on the back with shaded brownish spots, and the fins are tinged with yellow. The fish called "black trout," which are found in sluggish muddy streams, does not belong properly to the species. Trout will vary as much in shape and flavor, as in the color. They spawn in September and October, and the time for taking them is in the Spring and Summer. You may fish for trout until the 20th August, though the finest ones are taken in the months of May and June. They bite the best in March and April.

You can hook trout in several ways. Some prefer fly fishing, and this is the most interesting mode in Summer. The rod to be used should be light, and the line made of hair, or silk and grass.. The fly should be placed on a length of gut, or a single light

hair. Do not fish with your back to the sun. Stand as far from the stream as circumstances will allow. Always throw your line from you—never whip it out. Fly fishing is only suitable for pleasant weather. The best time of day is early in the morning or just at sunset. The line should be about half as long again as the rod. It should be thrown up stream, and let the fly gradually float down, and if possible fall into the eddies where the fish is apt to retreat in case of alarm. Let your line fall into the stream lightly and naturally, and when you raise it, do so gently and by degrees.

In trout fishing with the fly, only a small part of the line is allowed to be in the water. The end, or leader, should, as before stated, be a single light hair, if you can get one, as the trout is extremely shy and suspicious. If you stand on the bank of the stream, throw your line as far up as possible, as you cannot expect to catch a trout opposite or below where you are standing. If bushes intervene between you and the stream, (which is all the better,) do not rustle them or make a noise.

The usual length of a rod for trouting is fourteen feet, though longer or shorter ones may be used, according to fancy or convenience. The bottom of the line, unless you have a light hair, should be strong silk-worm gut. The size of the hook will depend upon your flies. Nos. 4 and 5 are used for worms and beetles, and 7 to 9 for small flies. If the flies are too small, put two on the hook, as these in-

sects frequently fall into the water in couples. The largest and best trout lie in shallow water, faced up stream, or else they lie near the surface. They are found on the South, or shady side of the stream. It is necessary to be exceedingly cautious not to show yourself, as if they see you they vanish for the day Grasshoppers and other small field insects are frequently used with success when worms fail.

Worm Fishing for trout is practiced with similar caution. After a rain, when the water of the brook is a little riley, you can catch trout by this mode—sometimes very rapidly. It is usually practiced in the spring A single split shot will generally be enough to sink your line, unless the stream is deep and rapid. The rod should be of bamboo, 16 to 20 feet long, and the line shorter than the rod. Keep the point of your rod exactly above the bait, steadily following it, as the bait drags along the bottom. When the fish takes the bait, do not let him run with it, but keep a steady hand. Do not jerk, but play gradually with him. If the day be clear, and the stream shallow, the best way is to wade up the stream cautiously, throwing your line far up, and letting it come gradually towards you. The fish always heads up stream, and you should not fail to remember if he once sees you he he vanishes.

Bottom Fishing with blue-bottle flies is practiced as follows: Use a silk or fine hair line, with gut leader, and a small quill float. Hook No. 10 is about the proper size. You will want one or two split shot

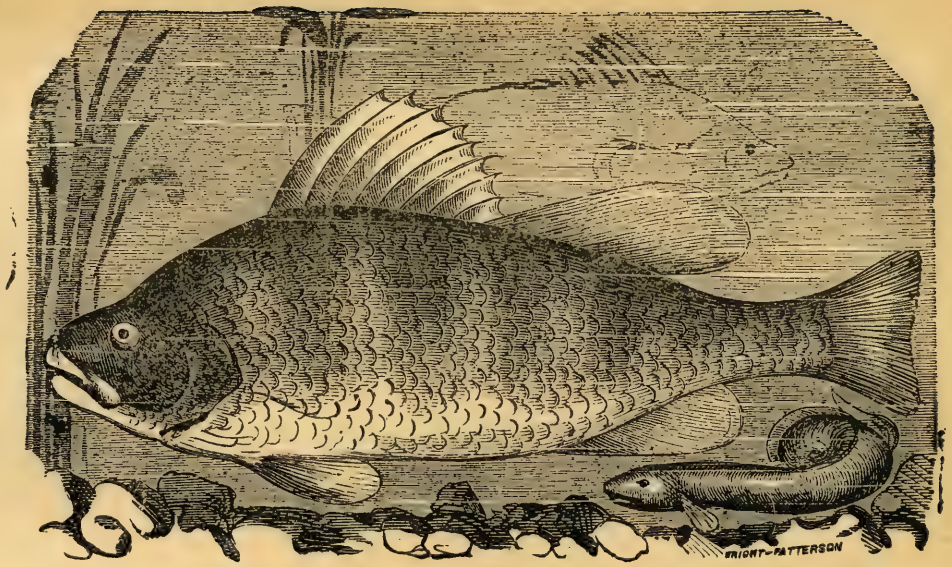
on the line. Fill a glass bottle with the common blue-bottle fly found on fresh horse or cow dung. Bait your hook with two of these flies, and let it sink nearly to the bottom. In this way you may catch trout in ponds, or deep waters deposited by running streams, and often in the slack water of mill dams, when you could not catch them in the stream itself. This kind of trout fishing is practiced in July and August. When the fish has taken the bait, play him towards the top of the water always. Do not let him tangle your line in the weeds or under-brush.

The fin of a trout, or other small fish, is sometimes used as a bait for trout with good success. It is dropped and roved, as with a minnow or fly.

Brook trouting is the very poetry of angling. It is an intellectual amusement, too, and requires as much caution, calculation, and prescience as a game of chess—as fine touches of art as are necessary to perfect a picture or a statue. Through the meadow, where the rivulet, scarce a stride across, glides silently through the grass; along the gravelly bottom, where it sings and gurgles among the pebbles; through the gaps between the stony ridges, where it chafes and dances and raises its tiny roar among the splintered rocks; and across the woods, where it turns, and doubles, and feigns to sleep in quiet pools, the trouter must pursue

"The *noiseless* tenor of his way."

In every promising nook, on every inviting eddy, at the foot of every mimic cataract—in fact, in every



YELLOW PERCH.

spot where a trout would be likely to resort for fun, or food, or privacy—his fly must settle. After each deposit in his "creel," he may look around and admire the prospect, open his ears to the song of the spring birds, and sniff up the delightful odors which the world exhales in turning green. But all these things are to the trout fisher as if they were not, while he is professionally engaged; it is only in the pauses of his art that he ventures upon a parenthetical glance at the general features of the landscape. His basket filled, however, he has leisure to be sentimental, and can sit down on a fence and invoke the muses, if he happens to have the gift of jingle.

Perch.

There are four distinct specimens of this fish inhabiting American waters, viz.: the Common Perch, the Yellow Perch, the White Perch, and the Black or Red Perch. The *Common Perch* is of brown olive tinge, mingled with golden hue, and has dark bands across its sides. The first dorsal fin is larger than the second, and all the fins are tinged with a lively red when first taken from the water. Length usually from five to fifteen inches. The *Yellow Perch* averages a little larger in size, with a small head tapering towards its mouth. Its jaws contain a large number of minute teeth. Its back is of olive brown color—sides yellow, and belly white. The stripes across its sides are brown, as are also its dorsal and pectoral fins. The ventral and anal fins are

of beautiful scarlet color. The *White Perch* has double nostrils and minute teeth. Its general color is whitish, with a dark hue—pale back and white sides—eyes large and pale. Its length is usually about eight inches. *Black or Red Perch* are so called from the different appearance of the fish at different times. Just previous to the breeding season it is of a dark red tinge. After getting entirely through spawning it becomes so dark that the red nearly disappears. Its tail is slightly forked, and its jaws are set with fine sharp teeth. In the Western States this fish grows to the length of two feet, and is known as the Brown Bass. They are an excellent fish for eating and are easily taken. The perch is a bold and ravenous fish, and fears neither the pike, the bass, or any other enemies of the small fry. He is sometimes eaten by them, but very seldom, in consequence of his back fin being large and armed with bristling points.

Perch are taken at all seasons of the year, but are in the best condition for the table in April, May, June and July. They spawn in March, are very slow in growth, but multiply exceedingly fast. The best time to fish for them is in the morning before ten o'clock, and late in the afternoon. Perch being sociable fish, usually move together in numbers, and these are generally of a nearly similar size. If, therefore, you catch one in a particular hole, it is your own fault if you do not get a good string of them from the same place.

A light stiff rod, with short line, float and sinker, is all that is necessary for perch. The usual bait is the common angleworm, which they will take as soon as anything. Shad spawn is sometimes used in the shad season, and minnows in the Spring of the year. When the stream in which you are fishing runs into salt water, shrimp will be found a good bait. Hooks to be used are Limerick trout, Nos. 4 to 7, according to the size of your fish.

The *Yellow Perch*, which is very plenty in the North Western waters of the United States, attains a large growth in the Lakes—some of them weighing three pounds and more. In the streams and ponds, from half to three quarters of a pound are the common weights. They are caught there at all seasons. Expert anglers use the minnow in catching perch, and early in the season they will bite very readily at that bait. Impale the minnow alive and lively on a No. 9 trout hook—stick the hook either under the back fin or through the upper lip—use a few shots for a sinker about ten inches from the hook, and have a cork large enough to prevent the minnow from sinking it. With this arrangement you must fix your line to keep the bait about mid-water. Small live frogs are frequently used for perch with success, fixed in the same way as the minnow.

The best way to cook perch is to fry them in pork fat, first frying some salt pork in the pan. Pork fat procured in this way is superior to lard or butter in frying any kind of fish.

The Sun-fish.

This is a small yellow and brown fish, with colors similar to the yellow perch, but without the shades—fins tinged with scarlet. Its shape is broad and flat like a pumpkin seed, and in some places the fish is known by that name. They are usually from three to eight inches long—though in some streams in the Western States a kind are found which exceed a foot in length. They are caught with the angle-worm, in the same manner as the perch. They bite very rapidly, and hence ladies on pic-nic parties are particularly fond of fishing sun-fish.

Pickerel and Pike.

Pickerel are found in almost all the fresh waters of the United States. They are a sort of miniature fresh water shark, preying upon every living thing that they can master. This fish is very similar to the pickerel of Europe and other parts of the earth. It swims alone—is never seen in shoals—and its appearance in any particular locality is a signal for the sudden dispersion of the small fry. Pickerel have certain haunts, and though they usually move independent of each other, yet expert anglers will catch a considerable number. But to catch "a string of pickerel" is a good day's work. They grow very fast when they have an abundance of food, often reaching a foot in length the first year, and will double their size in two years more. They have been known as heavy as forty pounds and upwards.

PICKEREL.

though the usual fish is from three to twelve pounds. Rennie tells of a pickerel that was placed in a pond "with an abundance of other fish," and in one year it devoured the whole of them except a carp weighing nine pounds, and it had bitten a piece out of him!

Pickerel are fond of shady places, and in summer they frequent the parts of the stream nearly where the pickerel weed grows. They generally spawn in March or April, and earlier in some southern streams. In winter they get under rocks, or stumps, or into convenient deep holes, and they can be taken then with small live fish for bait. In rivers you can generally catch pickerel near the mouth of some small stream emptying into the river; the fall of the year is the best time for catching them. In the hot summer months they will seldom bite at all, except perhaps in a very windy day. In the fall, too, they are in better condition. Pickerel fishing in the spring is sometimes very successful, however, though the fish are not so good when breeding. It is a singular fact that small fish seem to be perfectly aware of the harmlessness of the pickerel in the summer, as they may often be seen sporting near where their deadly enemy lies still in the water, as if in a dreamy torpor. At this period their usual beautiful green color and bright yellow spots are dull and leaden. In the more northern waters they are sometimes taken as early as August in good condition.

The tackle used for pickerel is a pretty stiff 10 foot rod, with a reel, and some 50 or 60 yards of flax

line, which should be protected by the hook with gimp or wire. The Limerick or Kirby salmon hook is used. The size is 0 to 5, according to the size of the fish. In a running stream, the sinker and float will also be found necessary. The bait should be a small live fish, or frog, or the hind leg of a frog skinned. Worms are sometimes used in small streams, where the water is clear, and the game small. In using live bait, when the pickerel takes it, do not draw your line too quick. The bait itself, if properly impaled, will be very lively, and will be apt to make a violent effort to escape its enemy. Inexperienced anglers may take this movement for a veritable bite; but when the bite comes, there is no mistaking it. In impaling a small fish for bait, pass the hook under the back fin, just under the roots of its rays. This will not disable the fish, and it will appear lively in the water. When using live frog bait, you pass the hook through the skin of the back or belly, or the back muscle of the hind legs. The live frog is gen erally used on the top of the water—if not, you should let him rise occasionally to take the air. When the pickerel has seized your bait, give him plenty of time to swallow it, and also plenty of line. Sometimes he will hold it in his mouth and play with it before gorging. On bringing him to land, be careful of his jaws, for he has a set of teeth, sharp as needles.

Trolling for pickerel is decidedly an exciting and interesting sport if you have good and large game

A small sail boat, or skiff is used, with an attendant to manage the boat as you direct. You can use the live bait, or an artificial bait, as is most convenient. Some sportsmen are very fortunate with the artificial bait. A stiff rod and reel, with the same tackle as before described, and no sinker—is all that is requisite. The boat should move gently, and let your line drag far in the rear. With artificial bait the fish is hooked almost instantly. If you use live bait, be exceedingly careful in determining when the fish has gorged it. You should give him several minutes after he has seized it, for this purpose. On seeing the bait, a pickerel will generally run off with it, and will then stop to gorge it, but does not always do so. The sign that he has swallowed it is a peculiar slackening of the line, which experienced anglers can easily understand. But if he has gorged the bait, he will soon start off a second time, and sometimes will stop and start off the third time. In these cases you should never be in a hurry. When you are convinced that he has taken down the bait, draw a tight line, and strike for your fish. If he is large you should play with him until he is quite exhausted, or you may lose him in the attempt to land. The difficulty of taking a pickerel from the hook may be obviated in a measure by gagging. For this porpose some anglers provide themselves with prepared sticks, of various lengths. If the hook is completely swallowed, as is frequently the case, open the stomach in the middle, cut away the hook, and unslipping the

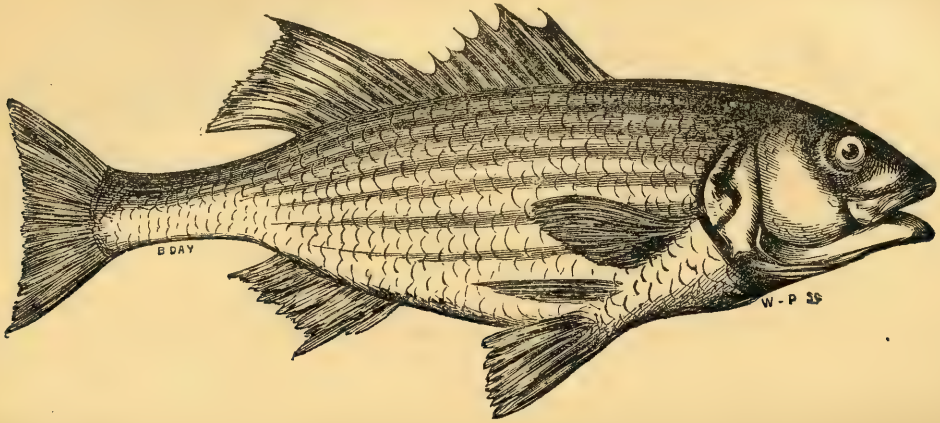
knot that holds the gimp, draw it out that way rathe than through the mouth.

In the Mississippi and Ohio rivers there are several species of this fish, but they all resemble the pickerel of other waters in a greater or less degree. They are of all sizes from half a pound up to twenty pounds weight.

The Striped Bass.

This excellent fish is found all along the Atlantic coast, from Florida to Maine. It inhabits the rivers, bays, inlets and creeks; and is taken in great abundance, particularly in the Chesapeake Bay and its tributaries. There, it frequently grows to the length of three, four, and even five feet, and weighing, in some instances, full one hundred pounds! The striped bass will run up some rivers a hundred miles or more, and in Maine they are found quite plentiful in the Penobscot. In the Connecticut, too, some very fine ones are taken. In winter they still keep their haunts, and do not go into deep water like other fish of similar habits. The word (bass) is said to be a Dutch name, signifying perch; but it little resembles the fish we know by that name. The bass is one of the most beautiful fish in point of color and perfect symetry that swims, and next to the salmon is the most delicious for the table.

In the spring of the year the striped bass runs up the rivers and into other fresh water places to spawn —and then again late in the fall to shelter. The



STRIPED BASS.

fall run is the best. It can be taken, however, nearly all the year round, and of all sizes.

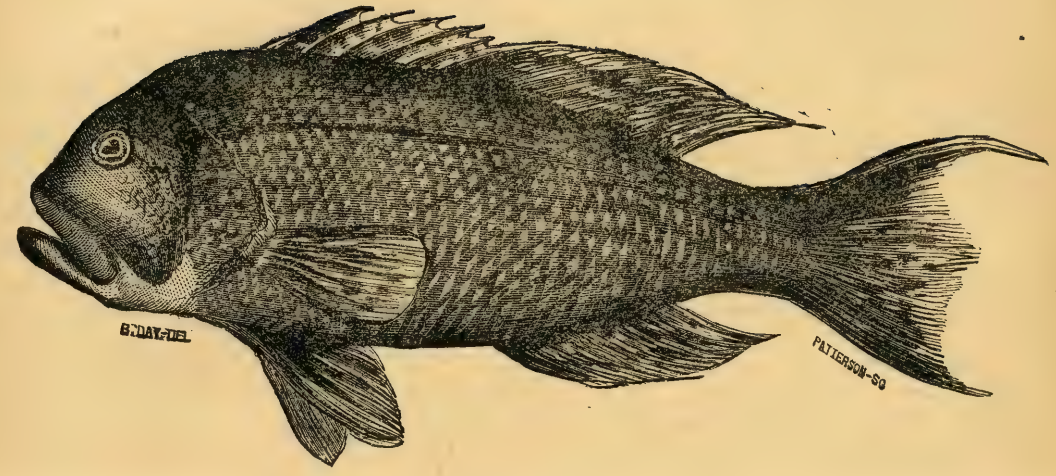
The apparatus for bass fishing is a pliable rod from 12 to 18 feet in length, according to circumstances. The reel should have 200 to 300 feet of line, which may be made of flax or grass. Silk line is sometimes used. The swivel sinker and float should be gaged according to your ground. The leader should be three or four feet in length, with a Limerick or Kirby hook from 0 to 3, according to the size of the fish to be taken. Double leaders are often necessary. Use your own judgment in this respect. In boat-fishing, the float is not usually used, and the sinker should be light enough to float off with the tide, but at the same time to touch bottom at all times. By this mode you will get large fish, as the large ones are generally nearest the bottom.

The best place for fishing bass is the quietest place you can find, and at full neap tide. When this tide occurs early in the morning, or late in the afternoon, and if the wind is off shore and a gentle ripple on the water you may take bass very easily, and in abundance. In rivers, get in the exact channel, or over some deep cove, near an outlet of a brook, or some small stream.

In the waters near New York City, the striped bass begins to bite well early in April. At this season shrimp is the best bait, especially in salt water. In fresh water they will bite shad roe at this season. In June you must begin to use soft shell crab

though they will usually bite at shrimp until about the first of August. The mode of fishing with crabs differs a little from the other, inasmuch as the bait should now lie on the bottom, whereas in the case of shrimps it is suspended near the bottom. A sliding sinker is now used, and the float dispensed with altogether. About the first of October you again resort to shrimps, as the shell of the crab now begins to harden. The Killey fish is also used now, in salt water, which is, in fact, preferable to the shrimp for large fish. In fresh water you should use the white opened soft clam. But the bass is very whimsical and dainty. In some places he will jump greedily at a clam bait, while at others he will take nothing but shrimp or crab. There is a beautiful little fish called the spearing which is fished with at certain places in salt water, with great success. In the Hudson river, the largest and finest bass are taken with set lines, as follows: Two stakes are driven in the bottom of the river at a certain distance apart, and a strong cord is stretched across. To this cord is attached short lines at convenient distances, with strong hooks, bated with tom-cod or other small fish. In this way the very largest bass are taken in great abundance.

Trolling for bass is excellent sport, and is practiced a good deal by amateurs. The tackle employed is a strong hand line, and artificial bait is used with good success. This consists of silver plated "spoons," or bits of mother pearl worked into a proper shape,



SEA BASS.

and other ingenious contrivances to be had at the fishing-tackle stores. Squid are also an excellent bait for trolling. To fasten the squid to your hook, you should use a needle and waxed linen thread. Take off the skin of the squid, and pull out the spine—then insert the needle through the opening made by the spine, and in this way fasten your hook so the point will pass through near his eye—commence sewing him onto the hook from his tail, and stitch up to his neck. This is so troublesome a process that few sportsmen use it; but very large fish are taken in this manner.

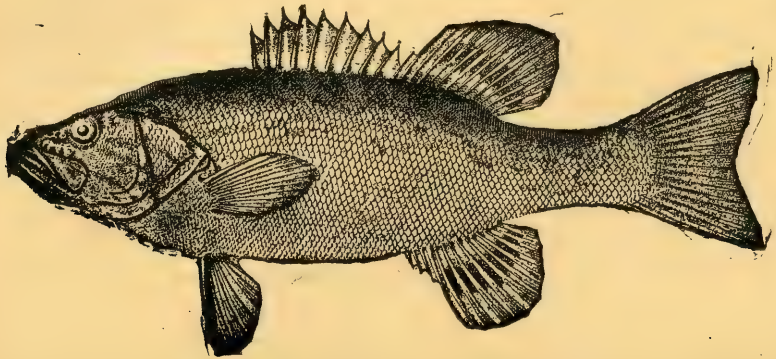
The Oswego Bass, and Black Bass.

There are two distinct species of the black bass, which are so near alike that it is hard to distinguish one from the other, unless they are together. The observable difference then is, that the Oswego bass has a more forked tail, is thicker at the shoulder, has coarser scales and larger mouth. This latter fish is found in great abundance in Lake Ontario and particularly at the mouth of Oswego river, which gives him his name. He also frequents other streams which flow into Ontario. The black bass is abundant in Lake Erie, and a few of them have found their way into Ontario, probably by way of the canal, as it is not supposed that any one could survive the fearful descent of Niagara Falls. These two fish are alike in their habits and peculiarities. A third species of black bass in Lake Huron, grow

larger than the Oswego species, which seldom exceed fifteen or sixteen inches in length, but is chubby-shaped, being five inches broad, and two or more in thickness. The black color of this fish extends the whole length of the back and sides, growing lighter as it comes towards the belly, and in some cases of a yellowish and sometimes of a greenish hue. It generally feeds on small fish, which it takes in head-foremost, and it is this habit that enables the angler to hook them easily. It will bite, at certain seasons, at lobster, and muscles; and a peculiar artificial fly is also used, at times, with success.

This fish begins to bite at Tonnawanda in the latter part of May, and at Oswego early in June, and at about the same time in the more western lakes. They continue to afford good sport for a couple of months, the time for fishing them being early in the morning and after four in the afternoon. In August they are spawning, and will not usually bite at all, and if caught are poor affairs. In September and October they may be taken again, and some fine ones are caught in the latter month.

The tackle used for fishing black bass is similar to that described for striped bass, viz.: a stout pliable rod, with reel, and some two hundred feet or more of flax or grass line, with a gut leader four or five feet in length, and a Limerick or Kirby hook. For bait, live minnows are the best for large fish. Fix your hook through the eyes of the minnow with extreme care not to touch the brain, and he will swim



SMALL-MOUTHED BLACK BASS.

almost as lively as ever. In some parts of Michigan small sun-fish are used as follows · After running the hook through the end of the nose of the small fish, conceal its point with an angle-worm. On being thrown into the water, other sun-fish will throng round the captive, being attracted by the worm. The bass darts suddenly among them, and while those that are free escape to shallow water, the bait is seized by the head, and the bass is thus easily hooked. After hooking your bass, it is not always that you catch him. Indeed he is the most uneasy fish imaginable to be hauled out of the water, and his vigorous and pertinacious struggles for liberty make the sport of fishing him excellent. After being hooked, the bass will often rise to the surface and leap into the air, shaking himself violently to dislodge the hook. At other times he will turn suddenly towards the angler, slacking the line, and in this way detaching himself from the hook by floundering about. It is, therefore, necessary to be careful to keep your line taut by means of the reel; and with proper care and expertness in this respect you will land your fish. A large artificial fly of gay appearance, is also an excellent bait, and next to the live minnow. You can usually get the fly at a fishing-tackle store, or if you make it yourself, the body should be of peacock feather, and scarlet wings tipped with white pigeon feathers. The scarlet is what attracts the fish, and be sure to put that on your fly. Small frogs and craw-fish are sometimes used for bait; and

in May, in the rivers, they will bite angle-worms. The bait, in all cases, should be kept in motion, as in that way it attracts the attention of the bass, and he darts at it very suddenly.

Trolling for black bass is excellent sport, and six pounders are sometimes caught in this way. You may use the spoon with good success, or a few white feathers with scarlet cloth fixed up to imitate a gray insect will answer. In Lake George, trolling is the favorite sport, and the bass caught are usually from one to four and a half pounds weight.

In Niagara river, near its confluence with Lake Erie, both black bass and perch are taken in the summer season in untold thousands with the hook and line, both by professional fisherman and amateurs. Trolling is the favorite scientific way of catching them. You take a light, clinker-built boat of some twelve or fifeen feet long, at Buffalo or Black River, enter the river a mile below, go down the current three miles to opposite the head of Grand Island, then bait and throw out your hooks, slowly drift down the river near the island shore, and by the time you reach Falconwood, if it is a good day and you are an expert angler, you draw up half a dozen to twenty beautiful bottle-green victims, giving you all the play to land them securely in your boat that the most ardent Waltonian would desire. They are from two to four pounds in weight, fat as a clam, and delicious as the shad or the tautog. This is the very poetry of bass-fishing.

The Red-fish or Spotted Bass.

This is a Southern fish being caught in nearly all the inlets of the Atlantic below Baltimore, and in those of the Northern shores of the Gulf of Mexico. At these latter points he is called the red-fish, because, in death, he changes to variegated reddish colors. His color, in life, is light silvery, and near the tail is usually one dark spot, which looks unnatural, and as though it came there by accident. Some of them have three or four of these dark spots in a cluster. When taken as far North as Charleston, he is called the spotted bass, a name derived from these spots on the tail. In North and South Carolina, he begins to bite in March, and is then fished for all through the rest of the year, and sometimes in January. In the Gulf of Mexico you can get red-fish the year round. He runs in shallow water, and at the extreme South is taken with a small sized cod-hook, and shrimp bait, or pieces of mullet will sometimes answer. With a rod and reel, you may follow the directions given for weak-fish or striped bass, using No. 00 Limerick or Kirby hooks, and twisted gut leaders.

The Mackinaw Trout, or Salmon Trout.

This is a fish of excellent flavor, and some people consider it fully equal to salmon. The flesh is reddish, and hence it is often called the salmon trout. The color is dark or dusky grey, back and sides sprinkled with spots somewhat lighter, belly light

brown or cream color—the teeth, gums, and roof of the mouth having a bright purple tinge. It is a large fish, usually averaging from two to five feet in length, and inhabits all the great lakes in the West, as well as the smaller lakes in the Northern part of the State of New York. It is entirely different from the common lake trout, so abundant in some of the Western lakes.

Sportsmen always take the salmon trout by trolling, or by set lines. For the latter they use the largest sized cod-hooks and cod-lines, and for bait, bits of lake herring or white fish are all that is necessary. In trolling, both tackle and bait are different, the minnow being chiefly used for bait. If you use a rod it should be a stout one with a hollow butt, and an extra top, which could be replaced in case of breakage. The line should be of a length adapted to the ground—firmly made of cotton or strong flax—and your leader should be of twisted gut a yard or more in length. A No. 1 Limerick salmon hook is generally used, with live bait, and No. 3 or 4 hook in fly fishing. A light swivel sinker is necessary when the fish run in deep water. In trolling use swivels freely to keep your line from getting tangled. When you have a bite, slack the line a little to allow the fish to gorge his bait, then begin to pull steadily, after arranging everything in a proper manner to enable you to play your fish. A gaff is generally used for securing the fish after he is brought to the surface. In fly fishing the largest and most gaudy sal

mon flies are generally chosen, attached to No. 3 or No. 4 salmon hooks. Trolling for salmon trout is most excellent sport, and amateurs sometimes spend a whole month at a time in the wilds of Northern New York in pursuing it.

There is a new method for fishing the salmon trout, by using what is called a train of hooks, being a row of hooks fastened on a large round piece of gut, about an inch apart. Three or four hooks are generally used, though some sportsmen use six seven. They should be hooked in different parts of bait, one in the mouth, one in the tail, and others in tough parts of the shiner. The size of the hooks used are No. 5, Limerick salmon, or No. 1 trout. The mouth hook is on a loop, so it can be moved and adapted to any length of bait. The tail hook is fastened on the end of the gut. To ensure success you should have an experienced hand to row your boat in trolling for this fish. The necessary tackle can generally be procurred at the tackle stores, as it is a favorite and delightful amusement for amateurs.

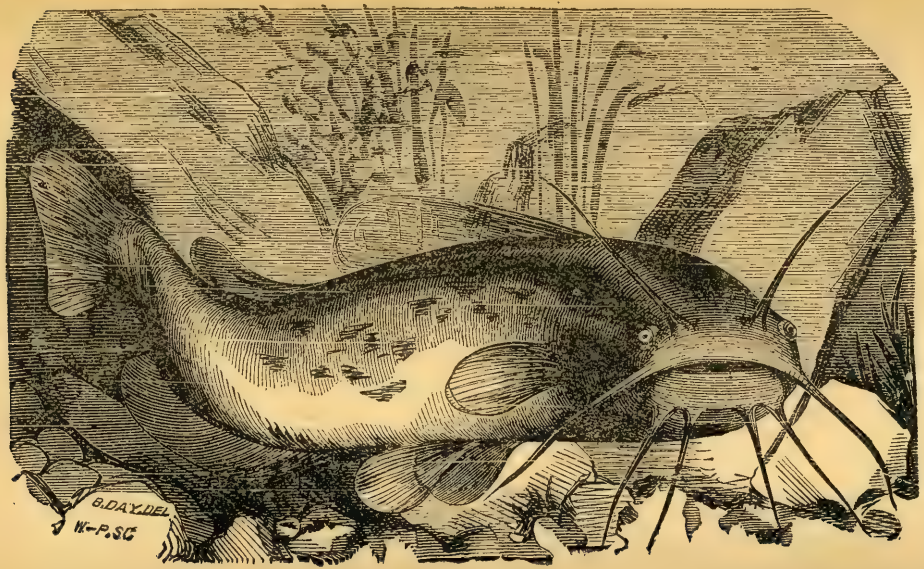
The Black Trout.

This is a fish rather coarse in flesh; but in outward appearance it resembles the black bass of the Northern lakes. His back is very dark, and the sides gradually grow lighter around to his belly, which is white. He has a large head and mouth, with projecting under jaw. He is found only in Southern waters, and may be taken in most of the streams in

the Southern states. One peculiarity of this fish, entirely different from the black bass, is that they meditate, at times, near the surface of the water, getting near logs or lilly-pads, so they can dive out of the way at the least alarm. In this position they are baited with success with a small fish called the horny head. The ordinary tackle used for the black trout is similar to bass tackle, viz.: a pliable rod eight or ten feet long, with a silk, grass or flax line, and reel —Kirby hook No. 2, or Limerick No. 1, attached to strong gut leaders. For bait, the minnow, and the Killey fish, or the roach is better when you can get it. He will not bite at all unless the water is clear. Artificial bait is often used in taking the black trout, as follows—a fancy fly made in red and white colors, either feathers or flannel, and fixed on a Limerick salmon hook No. 3 or 4. This should be attached to a long line; and with a light reed pole, the sportsman should whip it along on the water, when the fish will dart at it and get hooked. The time for fishing the black trout is from April until June, and from September down to winter weather. They spawn in July and August, and do not bite at all in those months.

The Cat-fish.

This is a fresh water bottom fish found in streams and ponds all over the United States. There are several kinds of them, which vary in size from a couple of inches in length up to those monsters of



CAT-FISH.

the same species which inhabit the mud banks of the Mississippi river, and the great Western lakes. The common cat-fish is of a dusky color on the back, which gradually lightens towards the belly, the belly itself being of a light greyish hue. The sides of the head are greenish, and some species of them have small prickly horns. They are taken in great abundance, and their size varies with the size of the stream, or the richness of their feeding ground. In good situations in large rivers they weigh from one to four pounds. In the Mississippi, and the lakes of Northern New York, they grow to twenty, thirty, fifty, and even one hundred pounds. It is an easy matter to catch cat-fish. You have only to procure tackle strong enough to draw them out of the water, using a hook according to the expected size of your game. A single or double gut leader is necessary, according to the strength required. Minnows, pieces of fish, shad-roe, worms, toasted cheese, insects, pieces of meat or liver, chickens offal—any of these baits will attract the cat-fish. You can fish with hand lines, or with a rod, as you may prefer. The proper hook is the Limerick salmon from No. 1 to 5, according to the size of your fish. They do not bite very vigorously, but perform a series of fine nibbles, similar to the bite of an eel. The cat-fish is an excellent pan fish when properly cooked. In St. Louis the large ones are sold in market like our large sea-fish, being cut up in steaks of the size desired by the purchaser. They are plentiful always in mud bot-

toms, above mill-dams, and in coves of the river. The large ones are often taken by trolling with artificial squid or fly. The time for fishing cat-fish begins in April, and lasts until cold weather.

The Hake.

This is an Irish salt water fish, similar in appearance to the tom cod. In Galway bay, and other sea inlets of Ireland, the hake is exceedingly abundant, and is taken in great numbers. It is also found in England, and France. Since the Irish immigration to America, the hake has followed in the wake of their masters, as it is now found in New York bay, in the waters around Boston, and off Cape Cod Here it is called the stock-fish, and the Bostonians call them poor Johns. [Poor Pats would be more appropriate.] It is a singular fact that until within a few years this fish was never seen in America. It does not grow so large here as in Europe, though here they are from ten to eighteen inches in length. They are fished for by day or by night, and bite the most readily when the tide is running strong, either out or in. The tackle used is similar to that described for black fish, the hook being No. 4 Limerick salmon. Shrimp, clams or crabs—either of them is good bait. The general color of this fish is a reddish brown, with some golden tints—the sides being of a pink silvery lustre. It is exceedingly voracious, and affords considerable sport in fishing, though our sportsmen seldom go in pursuit of it.

The Sea Bass and Porgy.

These salt water fish are caught in immense quantities in the vicinity of New York bay on what are called the Fishing Banks. In the summer months, which is the time for fishing them, steamboats are daily leaving New York to accommodate fishing parties. The tackle used is a hand line of flax or hemp twelve to eighteen fathoms long, with several hooks attached, ten to fifteen inches apart. The hooks for the porgy should be the black fish hook No. 3, and for sea bass, the Kirby pattern, No. 1. Provide yourself with a goodly number of hooks, as you are apt to lose them in various ways. You should have a lead sinker weighing three quarters of a pound or more. Clam bait is the only kind necessary, and if you salt it a little it will be tougher and stick better to the hook. You should watch your lines cautiously, and jerk them strongly at each bite to hook your fish, or you may lose your bait. The fish thus taken average from one to four and a half pounds, and it frequently happens that two or three are drawn out of the water together. You will thus see the necessity of having very strong tools, and also of wearing an old pair of leather gloves to preserve your hands from blistering while drawing up your fish.

The White Bass.

This is a very fine fish, somewhat resembling the white perch, though larger. It is found in the lakes of Northern New York, and also in some of the

more Western lakes. Its back is dark, with white sides and belly, and with narrow darkish stripes running lengthwise on the sides. The size of this fish is from 10 to 15 inches, and it usually weighs from one to four pounds, though larger ones are sometimes taken. The striped bass tackle is used in fishing it, but it a very skittish fish, and to catch it requires a good deal of tact and caution. If you succeed in finding a good ground, however, you may have excellent luck, as this fish moves in schools, and when not frightened, will bite readily at the live minnow. The season for fishing them is in May and June, and in the fall months after the middle of September. They are exceedingly lively on the hook, and afford a good deal of sport.

The White or Silver Perch.

This fish is very plentiful in the Harlem river, New York city, and is also taken in some of the Long Island ponds, as well as in the Hudson river, in the Schuylkill, and in many of the streams of Connecticut. It probably frequents other soft water streams and lakes, though we are not well enough acquainted with its haunts to give any definite information. It moves in schools, and when in the mood will dart at the bait in the liveliest manner, sometimes springing entirely out of the water when seeing it. The tackle to be used for this fish is about the same as that used for the yellow perch, and the bait is the small minnow, or the Killy, or shiner, though

worms are sometimes used. The hooks should be Nos. 1 to 3 trout. They bite most readily early in the morning in shallow water near the shore, but are often taken at mid-day on bars near to deep water. At sundown the white perch may be found on the sunny side of the stream, or lake, and will then bite with the same eagerness as in the morning. His bite is different from that of the ordinary yellow perch, as when he gets hold of the bait he drags the float under and keeps it there. When fishing from a boat, the best way is to drift along down the stream, throwing your hook in every nook and corner; and where you once get a bite, anchor your boat, and fish as long as you have luck. You may be quite as fortunate by rowing up the stream and trying the same process over again. This fish always prefers sunshine to shade.

The Smelt.

In the United States this fish seldom exceeds ten inches in length, and the usual size is from five to eight inches. In South America they grow to the length of two feet, are semi-transparent, and are most delicious eating. Some of them caught by American sailors at the Straits of Magellan were thirty inches long by eight inches round the body. The smelt is exceedingly plentiful in the waters around Boston, and they are also taken in the rivers of New Jersey and the ponds of Long Island. They are of a pale green color on the back, with silvery

sides, and a satin band running along the sides. They may be called a sea fish, though they run up fresh water streams in the spring to spawn. They are caught in October and November, and in the winter months by breaking holes in the ice. The tackle used for the smelt is a silk, or silk and hair line, with Limerick trout hooks Nos. 2 to 5, on single gut leaders. The sinker should be pretty heavy to overcome the tide. Shrimp bait is generally used, or small pieces of minnow or frog will answer. If you wish to fish them through a hole in the ice, take a piece of small brass wire a foot and a half long, put it through a piece of lead for a sinker, and fasten your hooks at both ends. Tie on a cotton or flax line and then drop your hooks. You can use three or four of these lines at different holes, setting them, while you are either skating or running round to keep warm. In this way you will get a fine string of smelts in a short time. Smelts will live, breed and thrive when transferred to fresh water ponds; and by some people these fresh water smelt are considered the best eating. They live a long time out of water, and hence are good eating after being carried long distances.

The Yellow Pike Perch.

The color and appearance of this fish show it to be a true perch, though its form and habits are like the pike, or pickerel. Its back is of a yellowish olive, the sides lighter, but mottled with black, the

belly white, and the head of a brownish color, mottled with green. This fish is taken in great abundance in some of the Western lakes and rivers, including the Susquehanna and its tributary streams, and in the valley of the Mohawk is called the Mohawk pike. He is exceedingly voracious, and with proper tackle and bait is easily caught. A bass rod and tackle is the proper one, with Limerick salmon hook Nos. 4 or 5. The bait should be a live minnow or shiner. The size of the fish varies from ten to twelve inches in length, weighing from two or three pounds to ten, twelve and even twenty pounds. In rivers they frequent the neighborhood of swift running water, and in lakes they are found in deep holes, and under weeds, stumps, &c. The yellow pike is an excellent table fish, and highly prized at the West, where they are caught in great abundance. It spawns in April and May.

The Chub.

This fish is not very common, and being exceedingly timid and scary, is seldom taken except by experienced anglers. He is found in the streams and ponds of Western Massachusetts, in Otsego Lake, N. Y., the Passaic river, N. J., and in some parts of Pennsylvania. He conceals himself in deep holes, under projecting ledges of rocks, roots of trees, &c., and to fish for him successfully, it is necessary to get a position near some such place as one of these. The chub has a large head, greenish back, silvery sides,

white belly, and fins tinged with yellowish red. His length is usually from five to nine or ten inches, though in some places he grows larger. The tools used in fishing him are the usual trout tackle and rod, baited with the common angle worm in the spring, or grasshoppers in summer. They are also taken in summer with the different artificial flies made for trout. In spring and fall they bite at worms only. In winter they are taken in lakes and ponds by making a hole in the ice, and baiting with cheese, for the want of worms.

The Sucker.

There are a great many different species of the sucker, and some of them will not bite or nibble at any bait whatever. He is usually a white silvery fish with dark spine, and a peculiar puckery mouth. He goes by various names in different parts of the country, and frequents almost every stream and lake, large or small, throughout the Union. The kind that does not bite is sometimes taken with wire slip-noose, but as that is not legitimate sport, we do not deem it necessary to particularize the manner. The regular trout tackle and hooks are used in fishing the sucker everywhere, and worms are the proper bait, though he will bite at shad-roe in the spring season. There is a kind of black sucker, taken in Lake Erie, which goes by the name of the shoemaker. A red-tail sucker in some of the Western rivers is called the red-horse. A long species of sucker in the Ohio

river is called the carp—an excellent fish, and which affords a good deal of sport. In the Delaware river the sucker has larger scales than those caught elsewhere. As a general thing the sucker is not esteemed highly as a table fish, nor is there usually much sport in fishing them. They suck in the bait, and thus nibble at the hook. They are not very lively when pulled up, and unless cooked immediately their flesh grows soft.

Buffalo Carp, or Perch.

This is an inhabitant of the Mississippi, Missouri, and Ohio rivers, and is also found in some of the other large rivers of the West. He resembles the salt water porgy in appearance, though in reality more plump and round. He is of a smutty silvery color, and usually varies in size from ten to fifty inches in length, though in the Mississippi he grows larger. He is easily taken, and the tackle required is a strong flax or hemp line, with a stout bent hook of the size Nos. 1 or 2 salmon. The sinker should be heavy enough to carry your bait to the bottom. The bait used for the Buffalo carp is soft cheese. To fasten it properly to your hook, you must work it up with common cotton batting, or raw cotton. He is easily caught, and is extensively sold in the market in western river towns, being a very good table fish.

Why this fish is called a perch, we are unable to trace, or to ascertain, as it has not the least resemblance to any other individual of the perch family.

The Weak-fish, or Wheat Fish.

This is a sea-fish found only in Northern waters, chiefly those of New York and Massachusetts. The head and back is of dark brown color, with a greenish tinge. The sides are of a faint silvery hue, with dusky specks, and the belly is white. Some people suppose the name (weak-fish) to have originated in the apathy of the fish after being hooked, but this is not so, for he frequently makes the most determined and energetic struggles to escape. It is either a perversion of *wheat*-fish—which name originated in the fact that harvest time is the period to fish them, or else in the peculiar weakness of the muscles of his mouth. He is usually handsome looking, and is excellent eating, but his flesh is softer than that of some of the best of our pan-fish, which is an objection. The common size of this fish is twelve to fifteen inches in length, though in some instances he grows larger. His feeding ground is the same as the striped bass in salt water, and they are often caught with the bass; but the weak-fish never goes into fresh water. An angler for bass, if not successful, has only to arrange his tackle, and drop his line a little deeper to catch this fish.

The bait used for weak-fish is the shedder-crab and the shrimp, and sometimes he will bite freely at a clam bait. You should fish them at evening tide, when the tide is pretty well in, two hours before sunset. A large No. 1 light Kirby hook, or a slightly curbed Limerick, are the kind used. Tackle similar

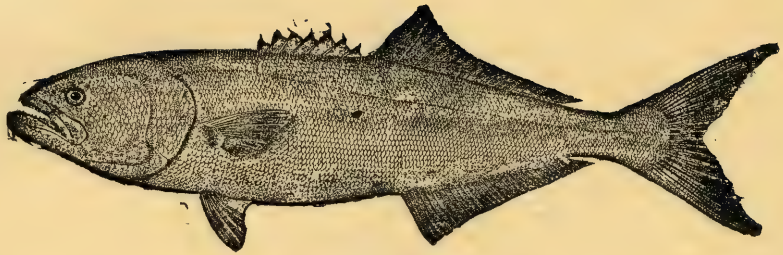
to that used for bass. Weak-fish are taken very easily, and in great abundance in New York bay, and the water adjacent. Also in the inlets of New Jersey, and in those of Massachusetts.

The Muskellunge, or Lake Pike.

This inhabitant of the St. Lawrence, and the Northern and Western lakes, grows from one to three feet in length, according to the breadth of water that he is found in. Built like a pike, he is of a deep greenish brown color, dark back, and pale sides spotted with greenish spots. In fishing for the smaller sizes, your tackle should be similar to that used for pickerel; but for large ones you want a good sized cod line, with a cod hook to match. He will bite greedily at various baits—a bit of fish, a slice of pork, a bundle of worms, or chicken offal, a small fish, or a frog, &c. It requires a good deal of care, caution and physical exertion to land him. He is a beautiful game fish, and is the best eating fish, next to the salmon trout, that inhabits the lakes.

The muskellunge (long-face of the French) is a noble fish. He is an enormous pike, with the lower projecting jaw armed with needle teeth clear into the throat, ranging from five to forty pounds weight, agile as lightning, and a perfect water tiger among the smaller fishes. No more beautiful fish to look upon than he, nor one so destructive to the finny tribes, cleaves the water. The Niagara river abounds in them—or rather they are plentier in the Niagara

than in any other water we wot of. They are caught here chiefly with the seine, but occasionally with the hook, in trolling; and when you do get fairly hold of a twenty-pounder, look out! Ten to one—unless you are a thorough expert, and give him a long play, wearying him out, and foiling his prodigious efforts at escape, with your gaff-hook or dip-net at hand—he snaps your line, or breaks your hook and escapes forever! This fish is an acrobat for feats of agility. He no sooner feels the barbed steel in his gullet, than he commences a series of writhings and contortions that would astonish an "India-rubber man." He makes a semi-circle of himself, and then springs back to a "normal" position as suddenly as a tense bow when the string is cut. He zig-zags horizontally, darts upwards, darts downwards, spins round, turns somersaults, and finally, if all these dodges fail, launches his lithe body, with a quiver, six feet into the air, and coming down head foremost, darts off at a right angle like a streak of lightning. If this last manœuvre does not break the tackle, the muskellunge gives in, and suffers himself to be lifted out of the water without betraying the slightest emotion. But for all that, in dislodging the hook from his mouth, look out for the *chevaux de frise* that guards the entrance—the spikes are sharp. A sharp customer is your muskellunge, but a more delicate fish—flesh white as snow, and savory as an oyster, well boiled, and served upon the dinner-table with proper sauces—does not exist.



THE BLUE FISH.

Trolling for Blue Fish.

The blue-fish is taken exclusively in salt water, and only through the three summer months, at which time he comes in from the sea. They are generally fished by trolling, though in some places on Long Island, experienced fishermen take them with a rod on shore. The tackle is very easily prepared, and costs but little, and the fish bite readily and are caught without much trouble. A sail boat is necessary, and if you want good sport, you should procure a guide who knows the ground where the blues delight to congregate. A large size cotton line is used, and it should be very strong, and 100 to 150 feet in length. An artificial squid made of bone, mother-of-pearl, or metal, is the tempting bait. It should be four inches long, of flat oval shape, and should have a good sized Kirby hook on the end. The size No. 0000 is about right. The hook must be so placed that its point is on a range with the flat side of the squid. Let the boat be sailed some four or five miles an hour, and should you be able to discover the exact position of the school, (they usually go in schools,) you must cross and re-cross the spot constantly, as the fish will not generally be moving about. When a fish is struck, the line should be pulled in steadily—do not jerk it, or let it slack, or you may lose your fish. On getting the fish in hand, you can easily shake him off the hook by holding your squid with the hook uppermost. Always haul in your line when tacking the boat, or you may lose

your squid in the grass at the bottom. The grounds for blue-fish in the vicinity of New York city are in Fire Island Inlet, South Bay, opposite Babylon and Islip, Long Island, and also in Pine Neck Inlet, opposite Quogue, at the East end of Long Island. Shrewsbury Inlet is also a good place for fishing the blue-fish.

The down-east fishermen use the common pewter spoon, in trolling for blue-fish, which they call a jig. It is used in the same manner as the squid before described. In pulling in the blue-fish, you must not let your line slacken in the least, and you should lift him into the boat the moment he gets alongside. Sportsmen who neglect this precaution will lose full half their fish by their disengaging themselves from the hook.

The blue-fish is singularly erratic in its habits. A century ago it was plentiful on our coast, and was held in high estimation as an article of food. During the last half of the last century and earlier years of this, it disappeared entirely. Within forty years it has returned, first appearing on the coast south of Cape Cod, near Natucket, New Bedford and Martha's Vineyard. In course of time it made its way into Massachusetts Bay, and appears to be gradually working to the northward. They have passed Cape Ann within a year or two, though not in great numbers, and a few have been seen as far north as the Isle of Shoals, off Portsmouth. They are very plentiful off Montauk Point, Long Island.

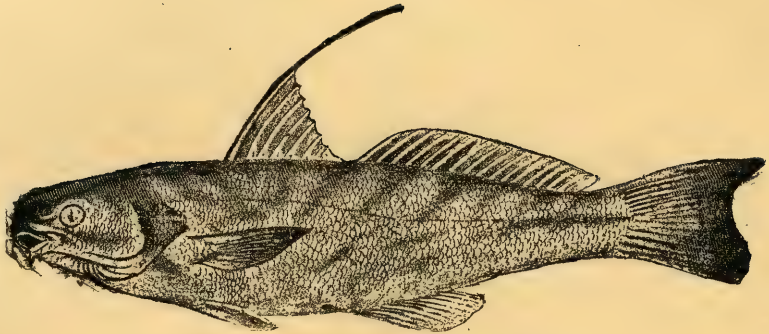
The blue-fish belongs to the mackerel family. The upper part of his body is of a bluish color, whence his name; the lower part of the sides and the belly are whitish or silvery.

The Pollock.

This is a salt water fish of beautiful appearance and singularly elegant shape. It is taken all along the Northern Atlantic coast, from Long Island to Newfoundland. From its agility and fine form, the Bay of Fundy fishermen often call it the "sea-salmon." It has a strongly-defined silvery line running down the sides. Above the lateral line the color is a greenish black. The belly is white. The time for fishing it is in the spring and fall. Jeffries Ledge, which lies fifteen or sixteen miles east by north of Cape Ann, is a favorite fishing ground for pollock, and immense quantities are taken there in the fall of the year. Formerly the fish was very little prized, was hardly ever eaten fresh, and was so carelessly cured that it had a low reputation in the market. Within a quarter of a century it has come into use, and is a favorite article, particularly when salted and dried. The pollock grows to the size sometimes of thirty pounds, but the average weight of those taken in deep water is ten pounds. In shallow water, the weight varies from a pound and a half upwards. The tackle used for black-fish is the kind wanted for fishing pollock, the hooks and lines varying with the depth of water.

The Cunner, or Sea Perch.

The cunner, or nipper (so called from their nipping bite) is a sea fish found all along the Atlantic coast, from Delaware Bay to Newfoundland. They are caught most plentifully near rocky shores, and are supposed to feed chiefly on crustacea. They are very annoying to the fisher for tautog or rock cod, as they swarm plentifully and take off with great readiness the bait intended for larger prey. They make, however, an excellent and favorite pan fish, and there are two or three old fishermen at Swampscott who devote themselves entirely to catching cunners in the cunner season, that is, from the middle of June to the middle of September, and selling them in the Boston market. They are from five inches to two feet in length, and in color no two are exactly alike. The general color is black mixed with brown, with faint transverse bars of an uncertain dusky hue. Large ones sometimes show a light orange tint throughout the whole body, with the head and gill-cover of a chocolate color mixed with light blue, and with blue fins. I have seen specimens thirteen inches in length, weighing a pound, so black as to be hardly distinguishable at the first glance from the tautog or black-fish, while others, equally large, were throughout of a vivid light yellow, varied with spots and bars of shades of the same color. They are fished for with the usual black-fish tackle, and clam bait. In fact they will bite at any bait used in fishing sea fish.



THE KING FISH OR WHITING.

The King-fish or Barb.

This is a salt water fish sixteen or eighteen inches in length, and weighing from one to two pounds. His haunts are very uncertain, and habits little known. In color he is of a bluish light brown, with a silvery gloss, and covered with spots darker than the general color. He is thick and stout about the throax, and gradually slopes towards the tail. He is found in places similar to those frequented by the bass, weak-fish, &c., and the tackle used in fishing him is about the same, except the hook, which should be smaller, say a Limerick or Kirby salmon hook No. 4. He is probably the best sporting fish to be caught in salt water, being so lively and determined when on the hook. The summer months is the time for fishing the barb, and the bait used is the shedder crab. Do not use too large a hook, as his mouth is small. He runs deeper than either the bass or the weak-fish.

The Eel.

Every kind of eel is spawned in salt water, and the young ones generally begin to run up the fresh water streams as early as April, though when spring is backward they do not start until May. The young eel, when he begins his journey, is about the size of a sadler's needle, and the way he works himself up over the cascades and mill-dams is very curious. He exhausts the atmosphere under his body, then lifting his tail, which is flat, over his head, repeats the operation, and raises his head another lift, and so on. In

this way they ascend waterfalls and swift streams with great ease. The ground which they select for a rendezvous is still deep water, with a soft bottom. There are two kinds of the eel which frequent fresh water streams and ponds. The best and handsomest has a small head, with a tapering mouth—a beautiful white belly, and is pretty thick and fat in the middle in proportion to his size. This, in Connecticut river, is called the silver eel. Their flesh is light and of delicious flavor, unlike the flesh of the other kind, and when full grown are from two to three feet long. The other description of eel to which we have alluded has a large mouth, with the under jaw extending beyond the upper. His head is larger, and his tail broader and flatter, his belly of yellowish tinge, and his flesh of a bluish color, which requires a good deal of cooking to make it palatable. This kind is the most plentiful, and frequents stagnant muddy bottoms, while the "silver" species, though they like soft bottoms, yet prefer to be near running water. The eel breeds in the latter end of winter, and in no case does he deposite his spawn in ponds, lakes, or rivers.

In angling for eels, you use a flax line, which should be protected near the hook with gimp or wire. The eel hook is used, of a size according to the expected size of your fish. The line should be of a length suited to the depth of the water, with sinker attached, and almost any pole of convenient heft will answer. If you are fishing in fresh water, common

angle-worms are good bait, though they will bite readily at shad-roe, pieces of fish, or at frogs, entrails of chickens, &c. In salt water, clams, bits of fish, shrimp, &c., are used. They are taken in salt water without a hook, as follows: Take some white horse hairs and work them into a kind of bag, which is filled with shad-roe or soft crab. In swallowing this bait the eel will entangle the horse-hairs in his teeth, and may be landed before he can get clear of them.

Bobbing for eels is done as follows: The bob is made by stringing a lot of angle-worms on a strong thread (stout worsted yarn or linen thread is the best) and winding the string into a ball on the end of your line, which is sunk by an appropriate sinker to the bottom. The eels will fasten themselves on this ball, and you can then carefully and slowly pull up the line, while they still retain their hold. After you get them to the top of the water, you may by a steady sudden jerk, land several at once. It requires some practice and expertness to do the thing cleverly. Some fishermen use a fine scoop net, instead of jerking out the eels in the manner described.

Pot-fishing for eels is a very simple process, and is practiced by those only who get a living by fishing. A long coarsely made circular basket is used, with ends like inverted cones. The basket is usually three or four and a half feet long, and seven or eight inches through. At the end of the cones, which run inward, are holes just big enough for the eel to squeeze through, and when he once gets in he is not

apt to find his way out again. The basket is well baited with the entrails of fowls, or of fish, with bits of fish, or meat, shad-roes, or almost any offal. One end comes off to admit this bait. Weights sufficient to sink the basket close to the bottom should first be tied well inside so it will lay flat on its side, and strong cords fastened to it to enable you to lower it to the proper place, as well as to raise it when it is full of eels. Eel-traps like these will sometimes take several dozen at a time.

Spearing eels is another mode which fishermen employ to advantage. The spears are forced down in the mud where the eels have buried themselves, and in some places eels are taken in great abundance in this way. You can spear from a boat, or while wading in the water where it is shallow enough The eel spear has several flat prongs, and takes the eel as described in the engraved representation below. These spears can be purchased at the fishing-tackle stores, or an expert blacksmith can make them. The prongs are of steel.

The Flounder.

This is an odd-looking fish, his belly being on one side and his back on the other. He is shaped something like the sun-fish or pumpkin seed, and on the edges, where the belly and back of an ordinary fish would naturally be, he has continuous fins from neck to tail. The back is of a dark color, both eyes being on that side, and guaged to look upwards at an angle about one-fifth forward from perpendicular; and his belly is usually white. The size of the flounder varies from five to fifteen, and sometimes to twenty-four inches in length, the breadth being about one-half the length. Their feeding ground is the soft mud of the bottom, near to bridge spiles, docks, and other bottom incumbrances, and they are sometimes found on bass grounds. They feed on the spawn of fishes, and on muscles and insects.

The time for fishing the flounder is the spring and fall months. In the summer he may be taken, but his flesh is soft and unwholesome. He will bite at almost anything used in salt water for fish bait, and in fishing him you may use any kind of tackle. A small hook is however necessary—No. 8 being the usual size. Flounders are an excellent pan fish; but they should be cooked as soon as possible after being taken. They are very plentiful on the shores of Long Island Sound, in New York Bay, and in the inlets of New Jersey. The Boston market is abundantly supplied with them from the numerous fishing grounds of that neighborhood.

This salt water fish is caught in great abundance in the vicinity of Boston, Massachusetts, and on the Great Banks. It swims in immense schools, and is very easily taken. In the spring the cod will bite in the most greedy manner, and if your tackle be strong enough, you can catch enormous quantities, and of very large size. The mud clam, or the moss bunker, either of them will answer for bait. Your line should be very stout, and made of cotton or hemp, 100 to 150 feet long, with the largest size black-fish hook, or a regular cod hook of small size. The sinker should weigh two or three pounds. Cod are not at all particular, and are not easily frightened. It sometimes happens that one may be lost off the hook by tearing the cartilege of his mouth. This same fish, with his mutilated muzzle, will be just as apt to bite again the next moment. They are fished for with hand lines, from boats, in all cases.

The cod fish, when fresh, is excellent eating, whether boiled or fried. It is a standard dish at the hotels and eating houses in Boston and New York.

The Sheepshead.

This is one of the very best of salt water fish, and like many others, only visits shore in summer. The time for fishing him is from the first of June until the middle of September. The Sheepshead is a squatty shaped fish of a dull silvery color, and with dark bands running from his back to his belly. His weight

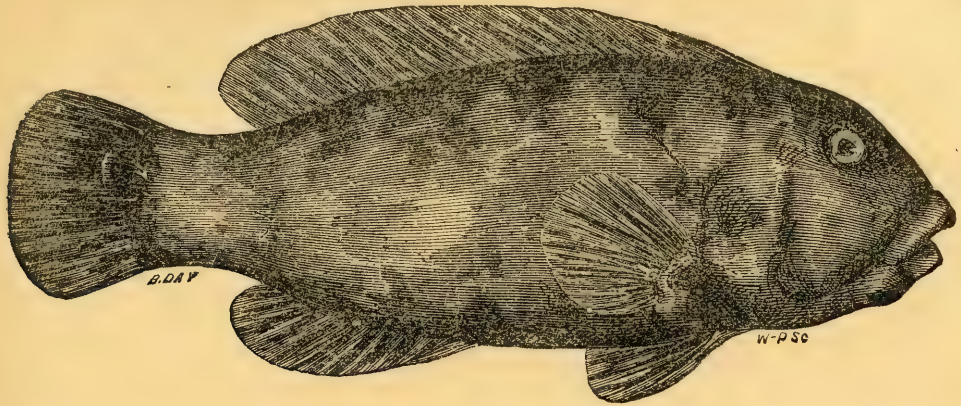
is usually two or three pounds—sometimes four and a half. The form of his face, which is somewhat smutty, is supposed to resemble the physiognomy of a sheep, though for the life of us we never could see the resemblance. The teeth, however, do look like sheep's teeth, and this may be the more rational cause of its name. These teeth enables a fish of good size to crunch the shell of a crab with ease. They are usually found on reefs, or about large rocks, where they feed on the soft clam, and the small rock crab, which articles are used for bait in fishing the sheepshead. The tackle wanted is a stout hemp or cotton line, 100 to 150 feet long, with a black-fish hook of the largest size. The clam must be put on whole, without breaking the shell. Insert your hook through its stem, and bury it entirely in the body of the clam. He takes the whole clam in at a mouthful, and chews it, shell and all. If you use crabs, take the same precaution as with clams. Sometimes opened clams (soft or hard) are used, but they should be of very large size, to attract the fish's attention. He will also bite at the worm, the minnow, the chub, and the lobster. When you have struck a sheepshead, you must be exceedingly cautious while playing him, or you may lose your game. He makes the most desperate efforts to get free, frequently bunting his head against a rock so as to break the hook.

Of late years this fish has become scarce in the Long Island waters, and experienced fishermen are in the habit of tolling them to certain haunts by

throwing in soft clams. In this way they are brought so near to shore as to be taken with a stout rod, and strong tackle, though the usual mode of fishing them is from a boat with a hand line. When using the rod, you should have a landing net, or you may lose all your fish. They generally go in schools, and if you catch one you may get a good string of them. They are considered by some people the best eating sea fish that is caught, though their meat is a little tough. If cooked properly, they do make an excellent dish. They should be split in slices and broiled on the gridiron. The sheepshead is caught in nearly all the rocky places round Long Island. Regular fishermen use nets and spears with good success. Spearing them by torchlight is a favorite amusement with some sportsmen.

The Black Fish.

This fish was called the tautog by the Indians. It is caught in the vicinity of Massachusetts and New York Bays, in Long Island Sound, and in nearly all the inlets of Rhode Island. Of late years, black fish have increased in numbers, notwithstanding the numbers caught to supply the Boston and New York markets. The upper end of Long Island is a famous place to catch them. Their feeding ground is generally on rocky bottoms, and reefs, though they are caught in other places. It is a singular fact that those found close in on rocky reefs are shorter or more chubby, and of a darker color, than those that



TAUTOG, OR BLACK-FISH.

sport in the running tide. The color is a deep bluish black on the back and sides, with light belly. The usual size of the black fish varies from one to three pounds, though larger ones have been caught. Eight and ten pounders are reported to have been taken in Rhode Island.

Black fish are usually caught with hand lines from a boat, though your true sportsman prefers his rod—a stiff one some twelve or fifteen feet long. A flax line of ten to thirty yards in length, with slide sinker, and triple gut snells, is all that you want. You can dispense with the gut if you wish, as the fish is not timid or wary, and a plain flax leader of ten to fifteen inches in length, will answer. You can catch them with almost any kind of a hook from No. 10 downwards. They frequent eddies made by the running tide, and there watch for shrimps or small crabs. By dropping your line back, and letting it run with the tide through an eddy, you are generally successful. As soon as the fish bites in earnest, pull up, starting your pull by a quick motion to fasten the hook in his mouth, which is tough and hard. The baits used are shrimp, soft crab, shedder lobster, soft clam, ordinary clam, &c. The crabs and lobsters are the best. If a thunder storm comes up while you are fishing for black fish, you may as well go home, as you will not be apt to catch any more that day. A school of porpoises will frighten them so that they will leave for the day. There is a good deal of sport in catching black fish, his bite is so

earnest, and he is so readily taken. In hand line fishing, many sportsmen have a brass ring at the end of their line, and to it they fasten two or three leaders, of different lengths, sometimes catching two fish at a time by this means.

The black fish begins to bite early in April, and is then easily taken. As the hot weather comes on he is not very fierce for a bait, but yet he is taken all the season through, until the cold weather benumbs him, and he refuses to eat. He never runs into fresh water, but remains in his haunts the year through. It is an excellent table fish, whether stewed or fried, though it is very difficult to dress.

The Mackerel.

This fish is seldom sought after by amateur anglers, for the reason that he does not frequent bays or inlets, but is found only in the broad ocean. He is nevertheless a game fish, and his capture affords a great deal of sport. The professional fishermen describe the mackerel as the handsomest fish that swims, and the most active on the hook. The season to fish mackerel commences about the first of May. A fishing smack, which can cruise with safety "out at sea," must be procured, and an experienced fisherman who knows the haunts of mackerel, should be engaged. The hook used is called the mackerel hook. It is about the size of No. 0 Limerick salmon, but shaped a little different. The necessary bait is only a piece of red flannel, or red cloth. They can

also be taken by trolling, with a tin squid, or jig. This is an oblong piece of bright block tin, with a hook fastened on the end of it, and a swivel on the end of your line. The tin skitters along on the surface, and, being mistaken by the mackerel for a shiner, he darts at it and is instantly hooked. The sport is excellent, as the fish bites so readily and so fiercely.

Shark, and Devil Fishing.

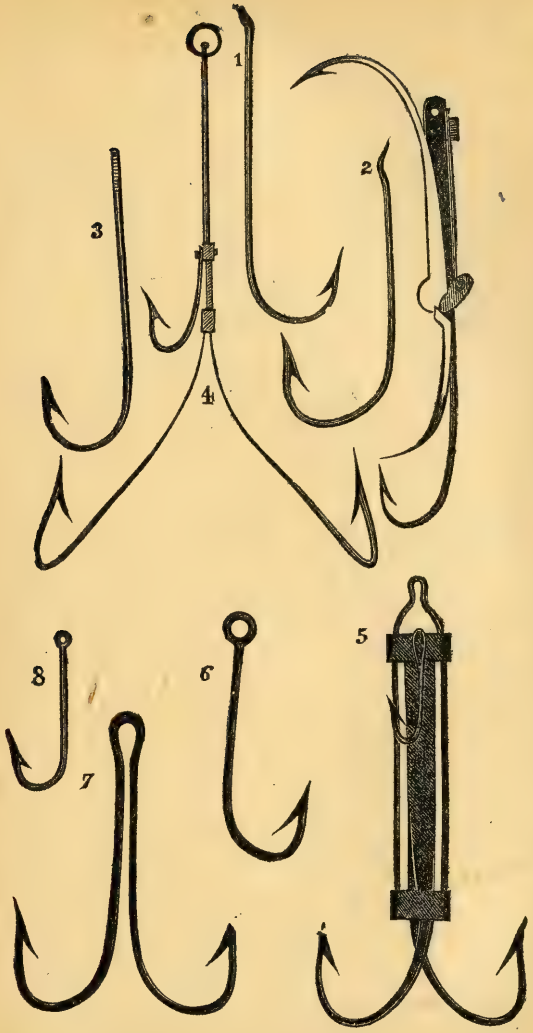
Shark fishing is a stupendous sport resorted to by persons who have a hankering after excitement. Parties who go on shark-fishing expeditions, engage a vessel for the purpose, together with experienced hands as assistants. The ship-chandler furnishes them with lines, while a blacksmith is engaged to make hooks, swivels, &c., of the sizes wanted. The line is a strong hemp cord made for the purpose, and hooks of various patterns are used. Almost any shaped hook will catch a shark, provided it is strong enough to hold him. When you get to your sharking ground, you launch your small boat, and tie your line to the stern. The hook should be fastened to it by a chain and swivel, and is baited with a good sized piece of beef or pork. You then row your boat along rapidly until you get a bite. Do not get too far from your vessel, as when you once get a bite, and hook the monster, you must bring him along side before you attempt to land him, or he may upset you in his wrath.

Catching the devil-fish is a favorite amusement of the South Carolinians. These monsters frequent the sounds and inlets thereabout in schools, and are killed in various ways—by harpooning, shooting etc. The sizes of the fish thus taken are from twenty to thirty feet long. After being struck with a harpoon, the devil-fish will sometimes run many miles, towing a boat full of men after him. The sport of taking them is very exciting.

Take Care of Your Tools.

The *American Angler's Guide* gives the following precautions relative to the care of rods and lines: When the fishing season is over, your rod should not be thrown carelessly by, but be cleaned, nicely oiled, and put away in a cool place, in readiness for the next campaign. The best of wood that a rod can be composed of, even though it be kiln-dried, if exposed a length of time in a dry atmosphere will shrink some, causing the ferules and guides to become loose. A moist atmosphere is preferable to a dry one. When rods that have not the ends covered where the joints are put together, become by a day's service swelled and dificult to separate, hold the ferule over a candle or lighted paper until it becomes sufficiently hot to dry out the moisture, and the parts can be easily separated. To prevent this annoyance, occasionally oil the wooden part that is let into the socket.

LINES.—Many adepts in the art are careless and neglectful of their lines, often leaving them (when



KIRBY HOOKS. &c.

soaked with water) on their rods, in which wet state, if they long continue, they are apt to mildew and rot. Every line, immediately after being used, should be run off from the reel and laid out freely, or stretched on pegs to dry. Should they have been lying by for any length of time, they should be thoroughly examined and tried in every part before using. Lines will chafe and fray out by constant wear, and many large fish are often lost by carelessness in these small but important matters.

To tie a Hook to a Gut or Line.—Prepare, by waxing with shoemaker's wax, a piece of strong silk or thread; take your hook in your left hand between your thumb and forefinger, about as high up as the point of the barb or a little higher, as you may fancy; place the end of your silk under your thumb, take three or four random but firm turns around the shank of the hook until you reach the end (for the purpose of preventing the gut being cut by the hook, and moreover that your gut may stick firmly without the possibility of coming off;) now lay your gut or line (the inside of the hook, up) on to this winding, holding it with the end of the thumb, and commence whipping it around firmly and closely, occasionally pressing the turns to keep them even; continue this operation until you get within three or four turns of the finishing point; in order to fasten firmly—give three loose turns, then insert the end of your silk under them, and drawing it through, you have a secure fastening, called the hidden knot. Another method

of finishing when you have arrived at the fastening point, is to make two or three half hitch knots; this is done by passing the end under one turn of the silk, making a loop, and drawing it down. The hidden knot is the better and most secure mode.

To repair a Broken Joint.—Should you be so unfortunate as to break a top or joint, which misfortune, brother angler, has happened to many a very careful and scientific sportsman before you—proceed in this manner. Take your two broken parts, and with your knife, or a plane if you can get one, smooth down each part in an oblique direction, fitting them closely together, and rubbing some shoemaker's wax on to the parts to make them stick; now take a long length of waxed thread or silk and wind it around, similar to the commencement of hook-tying, merely to keep the parts together, continuing it a little beyond the extreme end of the fracture; then carefully and firmly whip it evenly around until you pass the other end of the fracture; here halt, and wind the three last turns on the forefinger of the left hand, extended for that purpose; now pass the end of the silk or thread under the windings, carefully drawing out your finger, and pull it through, and you have the hidden or inverted knot, as before described. Be careful in finishing, see that your thread does not get loose, and your whippings are firm and even. In all cases of winding, see that your silk is well waxed.

THE END.

ELEMENTARY GYMNASTICS.

INTRODUCTORY.

"While he whom toil hath braced, or manly play,
Has light as air each manly limb, each thought as clear as day."
Castle of Indolence.

THE art gymnastic consists in regulating the voluntary motions of the body, and giving them more strength and precision. The immediate effect is an increase both in size and power of the parts exercised, in consequence of an admirable law, which obtains in living bodies, that (within certain limits) in proportion to the exertion which is required to be made, a part increases, not only in strength and fitness, but also in size. This effect is not only local, but the whole of the functions of the body participate in the increased activity, and the mind (if it at the same time be judiciously cultivated) acquires strength, and is made more capable of prolonged exertion. If, then, bodily exercises are neglected, as they too often are by those who follow a sedentary occupation, the ill effects are soon exhibited, not only by people who are employed indoors, but by others who neglect to take some active exercise in their leisure hours. The difference which is apparent in the appearance of

the scholars in a girls' school, when compared with the next boys' school in a large town, can only be attributed to the same cause. The increase in the mental activity would more than compensate for the loss of time bestowed on a proper system of exercises, while the pupils would be healthy and robust. The evils of deficiency are only equaled by the evils of excess. In this as in most other things, the *via media* is the only safe road to success, health, and happiness. But girls should have a much modified course of exercises on account of their greater delicacy and less strength.

It has been an object of common remark that nearly all classes of the community have more or less contracted habits of stooping or other species of distortion. A perfectly upright erect form is rare, whilst among the masses scarcely a thought is bestowed upon health, elegance, or beauty.

There have been but a few amongst the brain-worked, desk-tired, indoor toilers and students of the present day who have not from time to time unfavorably compared their capacity for work in middle age, with their younger and more active days, when work began pleasantly and was carried forward with enjoyment.

They are apt to look upon those days as either gone for ever, or only replaced by an expenditure of time and money which they know too well it is in vain to think of, or sigh for. To such as these, Gymnastic exercises will be invaluable. They will soon become pleasant, whilst the result will be to many astonishing.

POINTS TO BE OBSERVED.

"Begin with gentle toils, and as your nerves
Grow firm, to hardier, by just steps aspire."

HAVE A motive! If possible in walking, jumping, climbing, or in doing any of the exercises given in this Treatise, have a motive and a will. A companion will sometimes add a zest to what would otherwise be a dull and listless mode of passing the time or fulfilling a duty. It is for this reason that games are so much more beneficial as a branch of physical education, than the best designed system of exercise, or other appliance. Winter, spring, and summer generally bring some seasonable enjoyment with them, which should be eagerly embraced as an adjunct to the exercises here given. The increased bodily vigor will greatly assist the enjoyment of all. Golf, cricket, sliding, skating, digging, gardening, dancing, all give vigor and action to the human frame, and employ the mind as well as the body.

Attention should be paid to the regularity of breathing. Whatever increases the capacity of breathing improves the health, and the greatest attention is given to this point by all gymnastic teachers. Good wind is necessary for all feats—for the enjoyment of outdoor exercise of every description. It may be wonderfully improved by reading aloud, by taking long inspirations on first rising in the morning, either indoors or before an open window, or, better still, in a garden, at first cautiously, but it may be continued for ten minutes at a time. Few things are better as a guard against consumption, and for improving the breathing generally.

The dress, too, must be considered. It should be loose fitting, and, if possible, of flannel, confined with a belt round the waist. Taste will dictate the color, and convenience the width of the belt. The shoes should be of soft leather, light, and made like Irish "brogues," without heels.

Sudden transitions are to be avoided. Exercise to be of use should begin gently and terminate in the same manner. The left hand and arm should be exercised until they become strong

like those of the right. Beware of draughts; being cooled too quickly when perspiring is injudicious. Drinking while hot and getting into a cold current of air must be avoided. A coat or wrapper should be handy to cover over the body the moment exercise is over. No exertion should be carried to excess, as that only exhausts the body. Strength will come surely and gradually.

Economize your power. Do not waste your energies. Avoid kicking with your legs when performing a feat with your arms and hands. Do what you have got to do quickly and easily. The best gymnasts are those who perform their feats with the least effort.

FREE MOVEMENTS.

"If at first you don't succeed,
Try again."

Good resolutions are made at night and broken in the morning. It is tiresome to think how we must be roused from our sleep to undergo a course of active exercise, and begin those horrid gymnastics. But you can begin, my trembling boy, in bed. Poor dyspeptic, you may begin by

Exercise 1.—Lay yourself on your back in bed, if you like, but the floor is better. Keep the body stiff, and let your arms lie close to your sides. Legs and heels to lie in the same line. Now, without moving the heels, raise the body perpendicular from the hips upwards, without moving your legs. How strange you could do it so easily! Lie down and try again. Better done this time. Just cross your arms over your breast, and "try again." Practice this ere you rise, varying it by clasping the hands over the head, and raise the body as before, keeping the arms on a line with the shoulders. This is a practical illustration of domestic gymnastics, which you may try before you rise.

Exercise 2.—Try and raise the right leg, until it is perpendicular. Now lower it again by raising the body until it rests by the side of the other. Try the same movement with the left leg. When you can do this easily, try both together. Rather funny, is't it, to have a gymnastic lesson in bed? When your back will bear the strain, endeavor to raise the lower extremities and pelvis so as to touch the pillow behind your head with your toes. This is not difficult, and on a hard mattress is excellent practice for the muscles of the posterior portion of the human frame. Keep the arms extended, resting on the mattress, the knees stretched. Return gradually to your old position, and you will find yourself quietly seated on the floor. Now vary the movement by sitting up, bend the knees, lay the soles of your feet flat against each other. Extend your arms, and hold the lower part of your legs steadily between your hands. Lower yourself on your back; carry your legs over your heels; keep your arms full extended; make a slight contrary movement, and return to your original position. If you prefer it, you may try

Exercise 3.—Turn your face to the mattress (for of course you are not so effeminate as to sleep on a feather bed), and extend yourself longitudinally, supporting yourself by the strength of your arms and toes; [see Fig. 1] the hands must be turned inward and the fingers point toward each other. Now allow the body to sink slowly, let the arms bend gently, still keeping the body extended, without permitting the stomach to rest. Touch the hands with the lips and return slowly to the first position. Repeat the movement deliberately again and again. A very useful variation may be thus performed. While in the foregoing position (Fig. 1.), put the right hand under the right hip, leave the left hand in its place as before. Allow the body to sink, gently bend the arms, keep the body still extended on the toes, touch the left hand with the lips, and return to first position and restore the right hand to its place. Repeat the movement with the left hand under the left hip, and you will have exercised many of the most important muscles of the

body. Now you may get up, and recollect that your lungs have been lying all night breathing slowly. Remember they are like a bladdsr in their structure, and can be stretched open to double their ordinary size with perfect safety. Expand the chest and defy consumption. On rising from the bed place yourself in an erect posture, throw your chest forward and your shoulders entirely off your chest. Now take a long inspiration, suck in all the air you can—inhale nature's universal medium, the common air, so as to fill your lungs. Hold your breath, throw your arms behind, holding your breath as long as possible. Now for the sponge-bath, if a shower-bath is not handy ; rub yourself dry with a coarse towel—don't be afraid of a little friction—and we will then proceed. When we come to deal with apparatus, we shall have something to say of a chest expander which may be used with advantage in the early morning in the bedroom.

Before the gymnast proceeds further with his morning exercise, a draught of water and a crust will assist him materially. He may then try

Exercise 4 (Fig. 2).—This is a very simple movement. The body is placed upright, with the feet together. [See Fig. 2.] The arms are extended and the body thrown on alternate sides (as shown in the above diagram) until the hands nearly touch the floor. This exercise will be found useful in all cases where any ill habit or contraction has been acquired by sedentary habits, as a consequence of wrong positions in sitting, writing. sleeping ; or where there is some natural inclination to deformity. The exercise may be continued with any degree of force, and varied according to the strength of the pupil.

Exercise 5.—By this time the pupil will have acquired a knowledge of what muscles he has, and of what use he can make of them. Simple as the exercises have been, it will be found that some of the muscles are stiff and not easily moved, yet it will soon wear off, and the pupil will rejoice in the freedom of his limbs. He may now proceed to the "extension" movements, as depicted in Fig. 3. Place the feet close together

and the toes across a straight line, so as to mark the situation of the feet; place the hands by the side; elevate them quickly above the head, and bring them forcibly and energetically down. [See Fig. 3.] Close the hands, palms upwards, and bring the fists close to the shoulders. Drive them forth, as if into your inveterate enemy, and then bring them back until your hands are level with your sides. Repeat each movement again and again—up, down, forward, backward. This exercise is useful to old and young, and possesses the advantage of being resorted to in all times and places, and brings into play the thoraic, dorsal, and abdomidal muscles.

Exercise 6.—Stand as in Fig. 3. Stretch out the hands straight at the shoulders before the body, and place the palms of the hands together. Now slowly seperate the hands, keep them at the same level, the arms straight, and try to make the backs of the hands meet behind you. This, to all, at the commencement, seems to be impossible; yet as the chest expands it becomes perfectly easy, though at first it will make the shoulders and chest rather stiff.

Exercise 7.—Stand in the same position [Fig. 4.] Grasp the left hand with the right, bring the arms behind the head, and move them from one side to the other. This brings the pectoral muscles into play with those round the shoulder.

Exercise 8.—Stand as before. Place the hands behind and let the palms touch, with the fingers pointing downwards as in Fig. 5. Now turn the fingers inward, and bring the hands as high as possible up the back, taking care to keep the palms of the hands close together. [See Fig. 6.]

Exercise 9.—Position as before. Close the hands, draw the elbows back until the hands touch the sides, and move them backwards and forwards until they move easily. You may now try the circular movement, as in Fig. 7, which is one of the best methods of enlarging the capacities of the air cells of the lungs. You may strike the palms and wrists together as they

pass in front. Every one of these exercises can be done in a bedroom, parlor, or study.

Exercise 10.—Stand as before ; bring the arms quickly in front as high as the shoulders. [See Fig. 8.] Turn the nails upwards, then swing them forcibly backwards, at the same time turning the nails backward. Keep the body perfectly upright. Do this slowly many times. Stretch the arms out as in Fig, 8, and place the palms together, keep the arms at same level, and bring the hands behind you, and try to make them meet [See Fig. 9,] This movement ought to be tried night and morning, until the hands touch easily.

Exercise 11.—A very powerful method of giving full play to the muscles of the chest, is here represented· Bring the right hand to the left shoulder. Extend the left arm on a line with the shoulder, [Fig. 10]. Throw the right arm by the right side, place the left arm on the right shoulder, and change the positions alternately several times. Then proceed to Fig, 11. Open the hands, raise the arms sideways, and touch the back of the hands straight over the head.

The foregoing exercises all more or less tend to exercise the muscles of the arms, chest, neck, and to give free play to the respiratory organs ; they may be varied in their order, or alternated with any of the following, which call other muscles into play, producing at first, in some instances, a painfully delightful sensation.

Exercise 12.—Amongst the old "extension" motions taught to our soldiers, are two which find an appropriate place here. The first practice is to stand upright, with the heels together, raise the arms straight upwards, the palms in front. Bend the body forward, as shown in tha annexed sketch, until the fingers touch the ground. The knees must be kept straight. [See Fig. 12.] This must be practised until a coin can be picked up with ease at each heel.

Exercise 13.—Take a staff or stick about three and a half

feet long. Grasp each end firmly over by the hands, with the end of the fingers towards the body, now raise the stick over the head, keeping the elbows straight, and hands firm until the stick touches the thighs. This is a very severe but excellent exercise.

Exercise 14.—Before you commence the following movements, strengthen the toes by raising the body on them with a stiff leg and straight knees as high as possible [Fig. 12.] Do it slowly, again and again; vary it by stepping from the toes, jumping from toes, keeping the knees straight and the body upright. Place the hands on the hips, left leg in front, toe towards the ground, and jump forward on the right toe. [See Fig. 14.] Use both legs alternately.

Exercise 15.—This will prove a somewhat difficult exercise at first, and will require the muscles of the legs and hips to be powerfully exerted. As you stand upright, lift the left foot behind, bend the right knee, lower the body gradually until you touch the ground with the left knee. Rise again; do it slowly with each leg in succession.

Exercise 16.—Stand upright as before. Extend the right arm at a right angle with the body, attempt to kick the hand with the right foot. It cannot be done at first, and may be tried with each leg and foot successively. The exercise may be varied by attempting to kick the back of the thigh with the heels alternately and rapidly. A third variation of the kicking practice, is to kick the chest with the knee, care being taken that the body is upright and the chest is not bent forward. When proficient in these exercises, try to kick both thighs together with both heels simultaneously. To perform the last feat well, a slight spring will be required. Both feet must come down on the same spot, and the performer ought not to lose his balance.

Exercise 17.—Place both feet together, and the hands on the hips. Kneel slowly until both knees rest on the ground,

Rise again without removing the hands from the hips, or the toes from a given line. Vary this by crossing the toes. Bend the knees gradually until you sit down a la Turk. Rise again without moving the hands from the hips. Very hard this.

Exercise 18.—You have probably found your level ere you have become proficient with the foregoing. Close your feet, extend your arms in front, bend the right knee gradually, and sit down in the same position. Try both legs alternately. This feat will at first seem a poser, but it is not so impossible as it at first appears.

Exercise 19.—This is a pleasant amusement both for old and young, and if done properly, calls, it is said, three hundred muscles into play. Place the feet close together, put the hands on the hips, rise on the toes, bend the knees and lower the body gradually till the thighs touch the heels. Extend your arms in front and fall forward, not on your nose but on your hands and toes. Keep the knees straight and body stiff, as shown in Fig. 1. Now take a piece of chalk and mark with the right hand as far as you can. Now let your companion try and do the same. By a little competition and practice, it will be found that each trial will show an improvement in the length of stretch. You should spring from the ground at a bound, and clasp your hands as you rise.

Exercise 20.—Stand with your feet close together and hands on hips, jump up and spread out the legs, close them, and cross them alternately.

Keep the toes pointed, or else they will come into collision with each other as they cross.

Exercise 21.—A pleasant feat is to jump through the hands held in front of the body, with the tips of the middle fingers together. Be careful though of your chin or your knees will catch it, which is far from pleasant; heeled shoes will also come in contact in anything but an agreeable manner with your thumbs. A variation of this is to have a staff or stick about

three feet long, and hold it with the hands about a yard apart. Stoop down, place your knuckles on the ground in front of your toes, holding tight the stick. Try and step over the stick without losing your grasp or moving the knuckles from the ground.

Exercise 22.—If you have a friend a few other simple exercises may be combined. Two other persons can sit down facing each other on the floor, with the soles of their feet touching. Then grasp a stick with their hands together, and pull against each other; first, with the knees straight; second, with them bent; and thirdly, with the legs apart. Or they may stand up facing each other, with toes opposite. Take hold of each other's hands, lean back and go quickly round. A third exercise with two persons, is to place the left hand on the hips, with the right foot in front, lock the middle finger in each other's right hand, and pull backward.

Exercise 23.—Minor variations of these elementary and parlor gymnastics suggest themselves, particularly if any portion of the body is not exercised by the daily avocations. Either arm may be advanced, and the hands turned inwards, upwards, and outwards. Sub-rotatory and various twisting motions of the body may be performed, the head may be turned and twisted, and carried from side to side, the body turned partly round at the loins, or one leg may remain stationary, and the other moved round as far as possible on both sides.

The majority of these free movements are well adapted for schools, and may be performed by a large number at the words of command.

EXERCISES WITH FURNITURE.

Ere we begin with the ordinary apparatus, let us describe a method of domestic practice, eminently adapted for the sedentary. We believe Peter Henry Ling, the author of "Kinesipathy; or, Gymnastic Cures," is the generally recognised sug

gestor of these exercises, though Young Troublesome, immortalized by Leech, had long ago brought them into domestic practice by imitating the contortionists in the cirque at Astley's. The chairs must, of course, be of the strong kitchen variety.

Exercise 24.—Place yourself between two chairs of the same height, each hand on the back of a chair, the seats of which are turned outwards. Rest the whole weight of the body on both wrists, keeping the arms extended, and raise the lower part of the body into a parallel line with the wrists. [See Fig. 20]. This position must be preserved for some seconds. Then allow the inferior extremities to descend gradually, and return to first position.

Exercise 25.—The hands on the back of the chairs, and supporting the body by the wrists, as in the foregoing exercise. Bend the knees and descend gently, till the knees almost touch the ground, [See Fig. 21]. Then rise in the same manner by the assistance of the wrists and shoulders, and return to first position.

Exercise 26.—Standing between two chairs, the seats of which are turned inwards, place a hand on each edge, keeping the thumbs inwards, the knees bent, the feet close together, and the heels raised. Then raise the body on the wrists, and extend forward the lower extremities, at the same time straightening them, and thus descend gently to the ground, [See Fig. 22]. Rise again, still keeping the lower extremities extended in front, and return to first position.

Exercise 27.—Placed between two chairs, the back of one turned in and the other out, with the right hand on the back of one and the left on the seat of the other, gently raise the lower extremities and extend them in front ; the upper part of the body to remain perpendicular, and supported on the wrists. Then raise the lower extremities, bearing the whole weight of the body on the left wrist, and place both legs on the back of the chair by a gentle and regular impulse [See Fig. 23]. Re-

turn to the first position by the same means, and perform the same exercise on the opposite side.

Exercise 28.—A chair being fixed on the ground so as not to move, place both hands on the sides of its back ; then raise the body on the wrists, and elevate the lower extremities to a horizontal line, [See Fig. 24]. Allow the legs to descend gradually to the first position.

Exercise 29.—Two chairs being placed with the seats inwards, put the right foot between them, the left knee to be bent towards the floor, both hands fixed on the edges of the seats, and the right knee supporting the body. Then endeavor to bring the lips to the floor by extending the left knee and allowing the right to go to the floor. [See Fig. 25]. Rise by a contrary movement, and return to first position. Repeat exercise with the left side.

Exercise 30.—An arm-chair being placed in the middle of the room, place yourself facing the seat, with a hand on each arm of the chair, and raise the body on the wrists, at the same time raising and crossing the legs ; then pass them forward between the arms, straightening the knees, and carry them over the back of the chair without touching it. Repeat this exercise many times, until the muscles of the upper part of the body are strong enough to accomplish it with ease. [See Fig. 26].

Exercise 31.—(With a bench.) First place yourself upright on the bench, with the toes close together on its edge; then allow the body to descend gradually by bending the knees and supporting its weight upon them.

The elbows must be kept close to the body, the forearm extended and the fist doubled ; then rising gently return to first position, [See Fig, 27] ; repeat several times. (Second.)—Being seated across the bench or form, fix a hand on each side and raise the body on the wrists, the knees bent and raised to the height of the hips, the body to lean forward, and in this position move along the form to the end ; then make the same movement back again. [See Fig. 28].

Exercise 32.—Place both heels together, bend the body and knees, with the elbows close to the body ; then rising and extending the arms behind, and inclining the body forward, by means of a strong impulse, take a jump, at the same time carrying the arms forward and descending on the toes, taking care to bend the knees. Repeat many times. This exercise can be performed with very little space.

Exercise 33.—A table, four or five feet wide, being placed in the middle of the room, the individual stands seven or eight feet from it ; then take a run, with the right foot foremost, and when near the table, put the hands on the center of it, with the right in front and the left behind ; by a strong impulse he must then raise the body by the strength of the arms and jump to the other side of the table, with his feet together and the knees bent.

BALANCING.

An essential feature in gymnastics is the preservation of the equilibrium of the body, [See Fig. 29]. If we try to balance with one hand a small stick, feather, or other object, we find how easy it is by a little judicious arrangement of a few dexterous movements to prevent it falling. If we apply the same faculties to the body, we acquire hardihood, presence of mind, and justness of eye; and a readiness at avoiding a fall by leaping. In exercising one's self in balancing, it is usual to commence standing on one leg alternately until it can be done with ease. When a man stands in an ordinary position the center of gravity passes down the spine between the feet, and of course every movement of the body changes the center of gravity ; it is never fixed. The body bends forward on one side according to the weight it bears on the other. A pole is used by professional balancers, though some of the best feats are to be done by the mere use of the arms and body without mechanical help.

After a steady balance can be kept on one leg on the ground, the gymnast passes to the edge of a brick or a pole lying on the

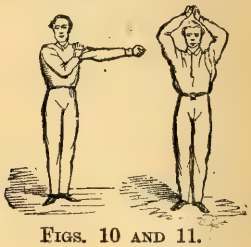
FIG. 1.

FIG. 2.

FIGS. 8 AND 9.

FIGS. 13 AND 14.

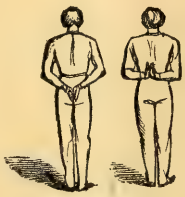
FIG. 4.



FIGS. 10 AND 11.

FIG. 12.

FIG. 7.



FIGS. 5 AND 6.

FIG. 3.

ground before he mounts either the parallel or horizontal bar. There are several ways of mounting a bar if it is no higher than the knee or thigh: the foot is placed on it, the hands are extended in front, and the body gradually raised. Another method is to sit astride on the bar, and with a sudden spring bring both feet on to the bar, the feet crossing each other at the heels, at the same time raising the body to an upright position. Unless a good balance is kept it cannot be done, [See Fig. 40, parallel bars].

THE INDIAN CLUB EXERCISE.

This exercise has become immensely popular of late years. Athletes, both amatuers and professionals, agree in placing the Indian Club Exercise as far above any other for developing and strengthening the muscles of the arms, back, and breast, expanding the chest and incidentally adding to the power of the loins and thighs. They have been freely introduced in England and on the Continent of Europe, where they are found in all well-managed public and private Gymnasiums. Medical writers that have given proper attention to the subject, all appear to coincide in the great benefits to be derived from a proper course of Club Exercise upon the general health, as well as its tendencies to prevent affections of the throat and lungs.

Those gentlemen at Mr. John Wood's and other well-regulated Gymnastic Establishments in the city of New York, who make a practice of exercising with the Indian Clubs, are all noted for their grace of carriage no less than their erect bearing and extraordinary strength.

The practice should begin wiih clubs not exceeding seven pounds each, and as the person using them becomes more and more an adept in handling them, he can go on increasing their weight almost *ad libitum*.

Many Professors of eminence have devoted much time and enlightened attention to the science and teaching of the Indian Club Exercise. The best work on the subject ever written is "The New System of the Indian Club Exercise." The author is Mr. SAMUEL T. WHEELWRIGHT, the publisher, Mr. *Thomas O'Kane*, 130 Nassau street, New York. From this valuable work we extract the following descriptions:

POSITION.—If convenient, toe a line on the floor. The heels a few inches apart, the feet well spread—stand in an easy position, with the chest extended and chin slightly raised, the left arm hanging by the side: the club within the right hand, with the knuckles outwards, and the hand opposite the right breast and a few inches from it, with the club perpendicular; the elbow close to the side, the body should be kept square to the front. In all of the following motions, it will be understood, you are to start from this position.

Learn all these motions thoroughly with each hand. You merely reverse the motion to perform them with the left. The first motion is

THE WREATH.—You commence by raising the right hand till it arrives about three inches above the centre of the head, the club leaning slighly toward the left; then dropping the club behind the back, pointing to the left, being careful to keep it parallel or pointing in the same direction with the line, and allowing it to describe a circle behind your back, the centre being your hand, which moves from the top of your head to the back of your neck.

As the circle is nearly terminated, you twist your wrist to the right to keep the club parallel with the line, and then bring it over the right shoulder, stopping when the hand reaches its former position—that is, opposite the right breast. Do not at any time allow the hand to go below the shoulder. After learning it with the right, change to the left.

THE SHOULDER TWIST.—Raise the hand till it arrives opposite the right ear, and then twisting the wrist so that the thumb will be directly to the right, and dropping the club towards the right behind the shoulder, releasing the club with the three last fingers, merely holding it with the forefinger and thumb parallel with the line, the hand moving a little below and back of the ear, and keeping it in that position, thus allowing the club to clear the shoulder, giving it a jerk as described in the Wreath, and allowing it to describe a circle, and twisting the wrist to keep it on the line as the club passes around. At the end of the circle bring the hand back to the starting-point.

THE HEAD CIRCLE.—Raise the hand and club perpendicularly at arm's length to the left, parallel with the line describing a circle in front of the body, the right shoulder being the centre, giving it a jerk as before, keeping the body square to the front. When the hand reaches the position in which it was when the circle was first started—that is, at arm's length above the head—you drop the club to the left, at the same time allowing the hand to fall at the back of the neck, and then describe a circle behind the back—this last circle you will perceive is the Wreath; then let the hand and club be again extended at arm's length, not perpendicularly, but in more of a circle, to make it look graceful, and then execute the first circle over again: making a continuous line and a circle within a circle.

Learn this thoroughly with both hands; with the left start the club towards the right.

THE SHOULDER CIRCLE.—Raise the club perpendicularly at arm's length as before, knuckles to the rear, and swing the club at arm's length to the right, parallel to a line describing a circle in front of the body, the shoulder being the centre, giving it a jerk as before, keeping the body square to the front. When the hand reaches the position in which it was when the circle was first started—that is, at arm's length above the head—you twist your wrist, bringing your thumb to the right, and let the club drop behind the shoulder, the hand dropping at the same time below and back of the ear, releasing the club with the three last fingers, merely holding it with the forefinger and thumb, the club describing a circle—this is known as the Shoulder Twist; then let the hand and club be again extended at arm's length, not perpendicularly, but more towards the right, and then execute the first circle over again—making, as in the last motion, a continuous line, and a circle within a circle.

Learn thoroughly with both hands—with the left start the club towards the left.

The motions we have just described are the incipient or primary ones. Once master all these by diligent practice, and all the other motions, including the double motions, can be easily acquired.

The positions and motions may be better understood by a reference to the diagram (Figs. 30, 31, 32, 33, 34, and 35.

OF THE PARALLEL BARS.

We are now out of doors, and we will try our strength and skill on the parallel bars. They are formed of two pieces of wood, from six to eight feet long, four inches square, rounded at the top, so that the hand will rest on them easily. About eighteen inches apart and four feet high will be found to be the most convenient, but they may be fixed and varied at pleasure. If intended to be permanent they can be fixed on four posts driven into the ground; but those fixed into a stout, moveable framework we like the best, as they can be used either in or out of doors. These exercises are useful in strengthening the chest and thoracic limbs, and medical men recommend them in order to extend and develop the ligament and intervertebral cartilages in spinal deviations. A thousand-and-one feats may be performed on the parallel bars.

Exercise 34.—(First position, Fig. 36.) Place yourself between the bars in the center, put your hands on the right and left bars at the same time. A slight spring will raise the body on to the wrists. The legs must be kept close. The first position may also be obtained by an upward spring, and then place the hands on the bars. After the wrists become accustomed to the weight and position of the bars, try "The Walk." Use your hands instead of your feet to move to and fro. It is not difficult, but tiresome. It mast be done regularly, with the head above the shoulders. The weight of the body must be kept on the rigid arm, while the other moves forward. The Swing may next be performed. Communicate to your body a gentle movement backwards and forwards, until it moves freely; the knees straight, and the feet touching each other. The swing may be increased, until in both the backward and forward movement the legs are nearly upright over the head, the arm-sockets forming the pivot.

Exercise 35.—(Rising and Sinking.) Being in the first position, place the legs backwards, the heels close to the upper part of the thighs. Lower yourself gently from this position,

until your elbows nearly meet behind the back. Remain in this attitude a short time, then rise gently, carefully avoiding touching the ground with your feet. You may vary this exercise by sinking gradually down as before, and kissing the bar behind each hand alternately. This is a graceful movement, but do not spoil it by touching the ground with your knees. [See Fig. 36].

Exercise 36.—A good and useful position is the Letter L, as it is fancifully called, [See Fig. 37.] The legs are drawn up at right angles with the body, while the knees are kept straight. It may be varied by the hands being clasped outside the bars whilst standing on the ground and forming the same figure underneath the bars

Exercise 37.—The gymnast will now be able to vary the preliminary exercises by throwing his legs over either bar whilst swinging [Fig. 38], and sit on the bar, or he may give himself a greater impetus and throw himself entirely over the bar on to the ground. He may proceed along the bar by a series of jumps with the hands more or less quick; or he can drop on the forearm, and let the elbow and wrist be supported by the bar, and swing in that position, [See Fig. 39]. Rise and drop into that position until it can be done surely and without effort. A nimble movement is to take the right hand from its position and to touch the left-hand bar with the right hand. Try the same movement with the left hand, and when it can be done easily try and perform the same movement by passing the hands behind the back in touching the bars.

Exercise 38.—Several pretty feats on the parallel bars require some little agility, but if the elementary free movements have been practiced they can easily be performed. To stand on the bars you must secure a good balance whilst astride one of the bars [See Fig. 59]. The sole of one foot may now be placed on the bar, and the toe of the other foot slipped underneath it. By means of this toe draw yourself to an upright position, and bring both feet together [See Fig 40.] To do this

properly you will have to practice balancing, as before described, or you may get an ugly fall. Stand in the first position, throw one leg over each bar, and rest your hands on the bar behind the legs. Remember your swinging practice. Disengage the feet, swing boldly through the bars, and when your legs are fairly through the bars extend them and seat yourself astride with your face in the opposite direction. Swing at one end of the bars, and when in full course spring forward, catch the bars with the hands, when the body, if it is gracefully done, will be in the position of the lowered body, [See Fig. 36.] If not done carefully, beware of how you fall. The curling movement commences with the second style of the Letter L. [See Fig. 41.] Count eight or ten, then turn slowly over, keeping the knees straight until you hang in reverse. Come slowly back, until you assume the original position. Another good movement is to slide the hands forward and the legs backward; put the toes over the bars until you form the "Indian Cradle, [See Fig. 42]. This does not give a pleasant sensation. After a short interval draw yourself up again. These exercises are not necessarily performed in the order given. They may be varied almost *ad infinitum*.

CLIMBING.

Exercise 39.—Procure a stout board, and according to its length set it against the wall at an angle of from 30° to 45°. Seize both sides of the board, place the feet flat in the center, and ascend by moving hands and feet, in short steps, alternately, [See Fig. 44.] This exercise throws great stress on the muscles of the loin and back, as well as the extensor muscles. A pole may be ascended in the same manner, but care must be taken that the shoes are not slippery. This movement can be performed in a room.

Exercise 40.—Procure a ladder, and raise the body by seizing hold of the rundles alternately underneath [See Fig. 44.]

Bring the elbow of the lower arm sharp to the side, previously to pulling up the body by the other. The legs should be kept as close as possible.

Exercise 41.—In climbing up a scaffold or other pole, which may be done by grasping it by both hands, the right above the left, the legs should alternately grasp the pole in the ascent by means of the great toe, which is turned towards the pole, [See Fig. 45.] In descending be careful not to come down too fast. The friction must be thrown on the inner part of the thighs, and the hand left comparatively free, [See Fig. 46.] In climbing trees care should be taken to use the hands more than the legs, and great caution should be used in laying hold of withered branches, or they may suddenly give way. Try each branch separately with the hands in going up, and with the feet in going down, ere you trust your body to it.

Exercise 42.—Rope climbing is an excellent as well as most useful exercise. It is comparatively easy to climb a knotted rope, or one in which short cross pieces are inserted, but the true gymnast despises such aids, and pulls himself up by his hands alone, [See Fig. 47.] But ere he can attain this dexterity he must make use of his feet somewhat. A sailor passes the rope from the hands between his thighs, twists it round one leg just below the knee and over the instep, as shown in Fig. 48. The other foot presses on the rope, and thus a firm hold is secured. When descending beware of letting the rope slip, or the skin will be torn from the flesh, [See Fig. 49.] Put one hand under another. Some clever climbers descend head foremost, and this is by no means difficult, as the rope is held by the feet, [See Fig. 50.]

Exercise 43. Seize the rope about a yard from the ground, and run with it as far as you can. Let go and swing yourself forward, marking the spot where the toes touch the ground; but this leads us to—

THE GIANT STRIDE.

This curious piece of gymnastic furniture is familiar to most schoolboys. It is like a gigantic umbrella stick, with ropes in place of the familiar whalebone and gingham. This "flying step" is generally much abused : the boys run round it instead of taking flying jumps over a ten foot pole, to set the blood aglow; and perform a series of evolutions which for grace and agility would make a poor dyspeptic patient blush for shame. The ropes attached to the revolving iron cap should be fitted with a stout cross-bar of elm or ash, about two feet in length. Hold these staffs at arms' length, and run round the pole until the whole body assumes the same line as the rope, and the feet touch the ground only at intervals. Practice this from left to right and right to left. When the plain circle can be done with ease, try a series of smaller circles with the feet whilst going round the pole. A string from the upright may be passed outside at various heights, which may be leaped by the mere action of the centrifugal force, as high as ten feet, easily by a boy. Be careful, however, not to lose your balance !

ON THE HORIZONTAL BAR.

Every one knows what a horizontal bar is, and its construction. One of the best of many modes of construction, particularly where the space is limited, is to have two strong upright posts firmly fixed in the ground, from fourteen to sixteen feet high, fitted with mortice holes to admit the horizontal bar. One of the posts should be fitted with notches to allow the gymnast to reach the top easily or to descend. [See Fig. 51.] The bar at first should be placed just out of reach of the hands of the gymnast, that a small spring is necessary to grasp it. Many of the feats on the horizontal bar here described may be performed on a swinging bar, [See Fig. 52,] as proficiency is attained. At first the bar should be firm, and the gymnast should grasp it with the hand, not with the thumb and fingers.

The thumb should rest by the side of the fingers, which should assume a hook-like form.

Exercise 44.—The first exercise is to hang on to the pole, the body remaining loose and straight in a natural position. Gradually let the body hang by one hand until the arms are accustomed to the weight of the body. Be cool, and do not twist, or down you will come. When the arms are used to the weight of the body, attempt to walk along the pole, moving first one hand and then the other. The body must be kept as still as possible. You may vary this by placing one hand at each side of the bar [See Fig. 53.] It will soon become easy.

Exercise 45.—Seize the bar with both hands and attempt to raise the body up to the bar until it is on a level with the breast [See Fig. 54.] Lower yourself gradually, and continue the exercise until it is easy and familiar. A good gymnast can do this a dozen time successively without experiencing fatigue. When it can be done easily the body may be raised to the full extent of the arm. This exerts the muscles powerfully, and requires a strong effort.

Exercise 46.—Now try the swing by the hands on the bar. It gives a peculiar sensation, but you soon become accustomed to it. When at the swing, accustom yourself to let go the bar and spring forward or backward on to the feet.

Exercise 47.—Raise the body as high as possible, throw the arms over the bar, holding firmly by them, [See Fig. 55.] This relieves the pressure on the wrists, and is a very useful exercise, particuiarly when the body is raised from the ground and is held up by one arm. To do this, however, the arm must be passed underneath the bar, which must be pressed firmly between the hand and shoulder [See Fig. 56.] Each arm should be tried alternately.

Exercise 48.—After raising yourself to the full extent of the arms, change your hands, and curl over the bar, dropping lightly on to the feet [See Fig. 57.] The changing hands is to

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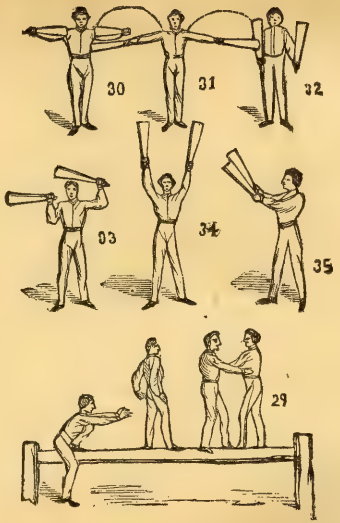
EXERCISE WITH CHAIRS.



INDIAN CLUB EXERCISE, AND BALANCING.

reverse the position of the finger points on the bar, and in this instance they must be turned towards the body.

Exercise 49.—(Kicking the Bar)—[See Fig. 59.] This feat is performed by hanging by the hands and drawing up the feet until the instep touches the pole. The head must be thrown well back, to counter-balance the legs and feet. Do this slowly, and beware of unnecessary jerks and strains when this can be easily accomplished.

Exercise 50.—May be tried. The legs are raised as in the kicking bar, but the feet are passed underneath the pole until the body hangs down with the arms twisted. The gymnast may drop on to the ground after this, or he may try to bring the body and legs back again. This will be found very difficult to all but the young and very supple. The strain on the twisted arm is very great.

Exercise 51.—A series of movements to sit on the bar are thus performed. When hanging on the bar, [See Fig. 53], pass one foot between the hands as in kicking the bar. Hitch the leg over the bar, the other leg must hang as low as possible. Give a swing backwards and come up right on the bar. The other leg can be brought over so as to sit on the bar [See Fig. 58.] The same attitude is often assumed by passing both feet under the bar and stretching them straight into the air until the head points to the ground, and the heels to the air. Draw yourself upwards until the weight of the legs and feet bring you upon the bar seated. In both these movements the beginner generally overbalances himself. You may leave the bar when seated on it in two ways. One of which is to put the hands on the bar with the finger points forward, slide backwards, keeping the knees bent, roll over backwards, and come down on the feet. The second is the vaulting practice. Place both hands on one side, with the fingers away from the body, then with a slight spring bring the feet over the pole and vault to the ground.

Exercise 52.—Hitch one leg over the bar and hold on with the hands, one on each side of the bar. Now give a swing backwards until you can give yourself such an impetus as to come right round the bar into the same position [See Fig. 60.] Try the same movement with different legs and with both hands on one side of the bar until you can do it a dozen times without stopping. The hands may be placed on each side of the bar, and the legs raised on each side and crossed above the bar, [See Figs. 61, 62.] Now try and spin round the bar like a fowl on a spit; when you can do this easily try the reverse way, bring the legs backward over the bar and spring in the Indian Cradle position, [See Fig. 63.] This is very difficult.

Exercise 53.—Form the Letter L, as on the parallel bars, count fifty before you drop. Bring the feet through the arms, keeping the knees straight all the time. Place one hand on each side of the bar, form Letter L, then bring the legs upwards and repeat the movement as before, but keep the arms inside the legs, as in the Fig. 64.

Exercise 54.—Sit on the bar, point the fingers to the front, grasp the bar firmly on each side, let your body slide forward until the bar crosses the small of the back, and the elbows project upwards. Draw yourself back again and resume the sitting position. Sit on the bar as before, then suddenly slide backwards and drop, catching yourself by your bent knees. Be careful to drop perpendicularly, and do not communicate any movement to the body. When this can be easily done, first one leg and then the other may be unhooked. The released leg may be thrown over the instep or hang loosely. When the beginner feels confidence he may hitch both insteps over the pole, forcing the toes upwards. Loosen the hands from the pole and let the body hang perpendicularly. Drop on to the ground on the hands and spring to the feet.

Exercise 55.—Two difficult movements are called the "trussed fowl," and the "true lover's knot." To perform the first, you hang on the bar, draw up the feet and place the in-

steps against the bar. Push the body through the arms and remain in that position as long as you can. The latter is a schoolboy's trick, and very difficult to do. Grasp the bar, pass the left knee through the right arm until the inside of the knee rests against the inside of the right elbow. Now pass the right knee over the instep of the left foot, let go the left hand, and with it grasp the right foot. You will now hang by the right hand in an attitude that professional tumblers can seldom assume.

THE WOODEN HORSE.

Every one likes the exercises on the wooden horse. The apparatus is easily made. It only requires a piece of the trunk of a tree, barked and smoothed, firmly fixed on four posts, or legs, so that it cannot be easily pushed over. It should be the height of the gymnast's nose. A little nearer one end than the other, a rough, stout saddle should be placed, with the wooden pommels covered with common leather. The hind pommel should be rather higher than the other. On the off side of the horse, a sawdust bed, some four feet square, should be made, on which the gymnast may alight after he jumps. On the near side a spring board is desirable, but not essential. A slight covering of sand on the near side is, however, absolutely necessary to avoid slips in taking the leaps.

Exercise 56.—Commence by standing on the near side of the horse with one hand on each pommel. Spring up, bring the arms straight, until the body is supported by the hands, and the knees rest against the body of the horse. Spring lightly down on the toes, and continue to practice this until it becomes easy and natural. Then jump a little higher, throw the right leg over the saddle, removing the hand, and you are mounted. Practice mounting both ways. To dismount, place the left hand on the fore pommel, and the right hand on the saddle. A slight raising of the body, and you can throw yourself off easily. Endeavor also to sustain the body by the hands and

arms, whilst the feet are off the ground, by throwing yourself a little way from the horse, so as to prepare yourself against the restiveness of a real nag.

Exercise 57.—Now then for the knees. Place your hands on the pommels, leap up and place the right knee on the saddle [See Fig. 62.] Down again, and up with the left knee on the saddle, when you can do it well and quickly by both knees, but beware of going over. To avoid this by no means uncommon occurrence, practice leaping with both knees on to the saddle, and then lean forward, make a spring and clear the legs from the saddle, and come to the ground [See Fig. 63.] Your motto in this, as in many other feats, should be "dare and do."

Exercise 58.—Mount and seat yourself behind the saddle. Place the left hand on the fore pommel and the right hand on the hurdle. Swing the body completely round, so as to seat yourself before the saddle. Change hands, and bring yourself into the position from which you started. You may vary this as follows: When mounted, place both hands on the front pommel. Swing yourself as high in the air as you can. Cross both legs whilst doing so, and twist the body so as to seat yourself again on the saddle, but looking in the opposite direction. Try the reverse action, and resume your original position. This is more astonishing than useful. Other feats are performed on the horse,—as vaulting, leaping on to the saddle with one hand on the pommels, and turning somersaults over the saddle, jumping through the arms [See Figs. 64 and 65,] leaping on to the horse as if it had a side-saddle on [See Fig. 66;] but these do not require any special directions. Fig. 67 represents the back vault.

LEAPING AND VAULTING.

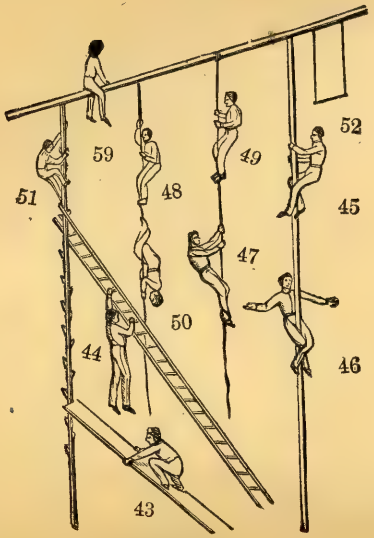
Exercise 59.—Leaping was a favorite exercise of the Greeks, and is one of the most useful of the gymnastic exercises. It admits of great variety. There is the standing jump, the

jump over the hurdle, bar rod, string, or cat-gallows. Leapers raise the feet and knees in the straight direction, not separating the legs. The body should be inclined forward, the run not too long, and in coming to the ground the fall should not be on the heels, but on the toes and soles of the feet. This is of great importance. Unaided by a pole or other implement, a man can jump at best something short of his own height. In a low jump the knees are raised with the spring of the body, but in higher leaps the legs must be kept well under the body. In leaping from a height the balance should be well preserved, as there is a tendency to come down on the nose. In leaping upwards the body must be kept well forward, as there is a tendency in this instance to fall backwards. In long leaps, the inexperienced generally throw the body over, instead of jumping feet foremost and recovering their balance by the spring of the body.

VAULTING.

Exercise 60.—To vault with grace and agility is a nice and useful accomplishment. The hands should be placed on the object, and the body and the legs thrown over it, as illustrated by the exercises on the wooden horse. Vaulters can throw themselves over a height of five feet six inches to six feet.

Pole leaping is now becoming much in vogue. The pole should be strong enough to bear the weight of the leaper without bending, and sound enough not to fracture at the critical moment. The pole for beginners need not be more than seven feet long, and an attempt should be made to spring short distances with it. The hands should not be placed higher than the head, the right hand at the top, and the left hand may be placed in the most convenient position. The spring must be taken from the left foot at the instant the pole touches the ground, and a short run may be taken to give the necessary impetus. Now, in our school-days, we always held the pole until the ground was reached, and of course came down with



CLIMBING.

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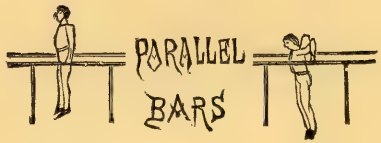

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ON THE PARALLEL BARS

our face towards the spot from whence we started. But since that period high and perpendicular leaps are taken over a six-feet and higher bar, and the pole is left behind. Care must be taken to place the hands high enough, and to have the end of the pole pointed, so that it will remain sticking in the ground. By letting the pole go as the body goes over the bar, the leaper descends straight forwards as in an ordinary jump. When you loose the bar, push it behind so as to make it fall backwards. As the leaper goes over the bar, the knees must be bent, so that on touching the ground they will form a spring, and the force of the fall is broken.

With a light pole and low jump, it is sometimes carried over. In long leaps, as much as eight or ten yards may be cleared Leaps from a height may be practiced, always bearing in mind that the pole must bear your weight, and that on reaching the ground the knees be bent for the spring.

If these directions are followed, you may attain health and agility though you may not attain the skill of leaping over a bar upwards of eleven feet in height, or emulate the professional gymnast on the "bar," "wooden horse," or "swing poles."

THE A. B. C. OF SWIMMING.

THE USES OF SWIMMING.

We need scarcely say that every one ought to know how to swim. There is not a man, woman, or child in the country that cannot, and ought not to learn how to swim. There is no absolute necessity for learning the various aquatic tricks which are performed by masters and mistresses of the art, but there is a necessity that all should know how to support themselves in the water.

There is, perhaps, no athletic exercise which is so easily learned, which is so well adapted to both sexes of all ages, and yet so little known. There is really no art whatever in ordinary swimming,—that is to say, in the ability to keep the

head above the water, and to propel the body in any given direction. Art certainly confers greater grace, gives more endurance, and ensures greater speed ; but in the mere support of the body, nothing is needed except confidence, and very little even of that quality.

As to the value of swimming, it is simply incalculable. How many most precious lives might have been saved had the deceased persons only known the least rudiments of swimming! How many families have been thrown suddenly into grief and distress, because the father and bread-winner happened to fall into a canal or pond that a swimmer could cross at a single stroke! How many parents could annually lament the loss of some beloved child, who has been accidentally drowned by falling into a river, or by stepping into a hole in the stream in which he is bathing !

We have seen a fine young lad of sixteen drowned by simply stepping into a hole not eighteen inches in width and barely seven in depth. Even when standing at the bottom of the hole, he was tall enough for his nostrils to be above the surface, but he was so frightened at the sudden slip that he lost his presence of mind, opened his mouth to call for help, allowed the water to run down his throat, began to cough, sank beneath the surface, and was swept away by the tide long before we could descend from the top of the cliffs.

Since seeing this lamentable accident, we have lost no opportunity of impressing upon all whom we could influence the absolute necessity for learning to swim—at all events for learning the art, so that under similar circumstances they would be able to sustain themselves until help arrived. We have taught very many pupils to swim, and although the attainment of any bodily exercise is not easily learned from a book, we will try to convey, in a few instructions, sufficient information for a beginner to teach himself.

Of course, the instructions apply equally to both sexes, and I have generally found that girls learn to swim much faster than boys.

HOW TO BEGIN.

The first care of the intending swimmer is, of course, to find a proper piece of water in which to learn his first lessons. The very best water that can be found is that of the sea, on account of its saltness and bitterness, whereby two great advantages are obtained.

The first advantage is, that, on account of the salt and other substances which are dissolved in it, the sea water is so much heavier than fresh, that it gives more support to the body, and enables the beginner to float much sooner than he can expect to do in fresh water.

The other advantage is, that the taste of the sea water is so nauseous that the learner takes very good care to keep his lips tightly shut, and so does not commit the common error of opening the mouth, which is fatal to all swimming, and is sure to dishearten a beginner by letting water get down his throat and half choke him.

As to place, there is nothing better than a sloping sandy shore, where the tide is not very strong. In some places the tide runs with such force, that if the beginner is taken off his legs, he will be carried away, or at least that he will have great difficulty in regaining his feet.

We strongly recommend him to walk over the spot at low water, and see whether there are any stones, sticks, rocks, or holes, and if so, to remove all the moveable impediments and mark the position of the others.

Take especial care of the holes, for there is nothing so treacherous. A hole of some six or seven inches in depth and a yard in diameter, looks so insignificant when the water is out that few persons would take any notice of it. But, when a novice is in the water, these few inches make just the difference between safety and death.

On sandy shores, the most fertile source of holes is to be found in large stones. They sink rather deeply into the sand and form minature rocks, round which the water courses as the tides ebb and flow, thus cutting a channel completely round

the stone. Even when the stone is removed, the hole will remain unfilled throughout several tides.

The next best place for learning to swim is the river with a fine sandy bed, clear water, and no weeds. Since that extraordinary river weed has sweep throughout our canals and rivers, it is extremely difficult to find a stream that is free from weeds. However, it will be easy enough to clear a sufficient space in which a learner can take his first lessons.

When such a spot has been found, the next care is to examine the bed of the river and to remove very carefully everything that might hurt the feet. If bushes should grow on the banks, look out carefully for broken scraps of boughs, which fall into the stream, become saturated with water, sink to the bottom, and become fixed with one of the points upwards.

If human hibitations should be near, beware of broken glass and crockery, fragments of which are generally thrown into the river, and will inflict most dangerous wounds if trodden on. If the bed of the stream should be in the least muddy, look for mussels, which lie imbedded almost to their sharp edges, that project upwards and cut the feet nearly as badly as broken glass.

Failing sea or river, a pond or canal is the only resource, and furnishes the very worst kind of water. The bed of most ponds is studded with all kinds of cutting and piercing objects, which are thrown in by careless boys and remain where they fell. Then, the bottom is almost invariably muddy, and the water is seldom clean. Still, bad as is a pond, it is better than nothing and the intending swimmer may console himself with the reflection that he is doing his duty, and with the prospect of swimming in the sea some time or other.

Of course, the large public baths possess some of the drawbacks of ponds, but they have at all events the advantage of a regulated depth, a firm bank, and no mud.

CONFIDENCE THE ESSENCE OF SWIMMING.

As THE very essence of swimming lies in confidence, it is always better for the learner to feel secure that he can leave the water whenever he likes. Therefore, let him take a light rope of tolerable length, tie one end to some firm object on the bank, and let the rest of the rope lie in the water. Manilla is the best kind of rope for this purpose, because it is so light that it floats on the surface instead of sinking, as is the case with an ordinary hempen rope.

If there is only sand on the shore, the rope can be moored quite firmly by tying it to the middle of a stout stick, burying the stick a foot or so in the sand and filling up the trench. You may pull till you break the rope, but you will never pull the stick out of its place. If you are very nervous, tie two sticks in the shape of a cross and bury them in like manner.

The rope need not be a large one, as it will not have to sustain the whole weight of your body, and it will be found that a cord as thick as an ordinary washing line will answer every purpose.

On the side of a stream or pond, tie the rope to a tree, or hammer a stake in the ground. A stake eighteen inches in length, and as thick as an ordinary broomstick, is quite large enough. Hammer it rather more than two-thirds into the ground, and let it lean boldly away from the water's edge. The best way of fixing the rope to it is by the "clove nitch."

Now, having your rope in your hand, go quietly into the water backwards, keeping your face towards the bank. As soon as you are fairly in the water, duck completely beneath the surface. Be sure that you do go fairly under water, for there is nothing more deceptive than the feel of water to a novice. He dips his head, as he fancies, at least a foot beneath the surface; he feels the water in his nose, he hears it in his ears, and thinks that he is almost at the bottom, when, in reality, the back of his head is quite dry.

The best way of "ducking" easily is to put the left hand on the back of the head, hold to the rope with the right hand, and then duck until the left hand is well under water.

The learner should next accustom himself to the new element by moving about as much as possible, walking as far as the rope will allow him, and jumping up and down so as to learn by experience the buoyancy of the water.

Perhaps the first day may be occupied by this preliminary process, and on the second visit the real business may begin.

NECESSITY FOR A GOOD BEGINNING.

In swimming as in most other pursuits, a good beginning is invaluable. Let the learner bestow a little care on the preliminaries, and he will have no bad habits to unteach himself afterwards. It is quite easy to learn a good style at first as a bad style, although the novice may just at the beginning fancy that he could do better by following his own devices.

The first great object is to feel a perfect confidence in the sustaining power of the water, and according to our ideas, the best method of doing so is by learning to float on the back.

We will give a separate paragraph to the important point of floating on the back :

To take care that the cord is within easy reach, so that it may be grasped in a moment, should the novice become nervous, as he is rather apt to do just at first. Take it in both hands, and lay yourself very gently in the water, arching the spine backwards as much as possible, and keeping the legs and knees perfectly straight and stiff.

Now, press the head as far back as possibly can be done, and try to force the back of the head between the shoulder blades. You can practice this attitude at home, by lying on two chairs and seeing whether your attitude corresponds with that which is given in the illustration.

When you have thus lain in the water you will find that you are almost entirely upheld by its sustaining power, and that only a very little weight laid in the water. On reflection, you will also discern that the only weight which pulls on the rope is that of your hands and arms, which are out of water, and which, therefore, act as dead weight.

Indeed, you might just as well lay several iron weights of a pound each upon your body, for the hands and arms are much heavier than we generally fancy. Just break an arm or a leg, and you will find out what heavy articles they are.

Now, let your arms sink gradually into the water, and you will see that exactly in proportion as they sink, so much weight is taken off the rope ; and if you have only courage to put them entirely under water, and to loose the rope, your body will be supported by the water alone.

These are facts, but we may as well have reasons.

Bulk for bulk, a human being weighs considerably less than water, *i. e.*, at the temperature of ordinary sea or river water. Now, as the lighter substance will float in the denser, it follows that the human body will float in water. If a dead body be flung into the water, some part of it will float above the surface until the lungs get choked up with water, and so the whole body is much heavier than it ought to be.

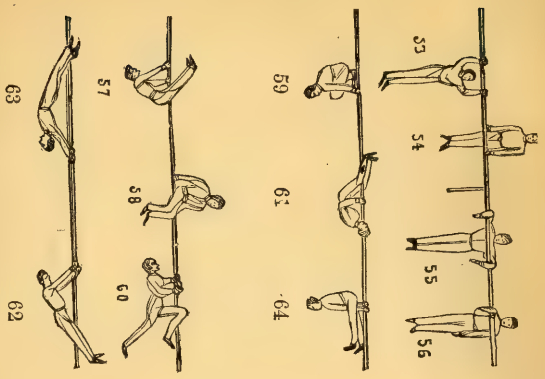
Now, supposing that a living person in a fainting condition, and, therefore, unable to struggle, were to fall into the water some part of the body would remain above the surface. But as the head, which is one solid mass of brain, muscle, and bone, is much heavier than water, it follows that the head would hang down in the water, and the shoulder-blades would appear above the surface, being buoyed up by the air-filled lungs. The hands and arms, of course, follow their natural inclination, and fall forward, thus turning the body on its face.

Then this is the natural position of a living human being in the water, provided that he does not attempt to struggle or alter his position. And the knowledge of this fact is the key to all swimming on scientific principles.

A considerable part of the body remains above the water, but it is the wrong part, as far as the preservation of life is concerned. We want to breathe, and it is very clear that we cannot breathe through our shoulders. Therefore, the first point in swimming is to reverse the natural order of things, and to bring the nostrils above the surface of the water.

The mouth may be set aside altogether, because there is no

ON THE HORIZONTAL BAR.



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ON THE WOODEN HORSE.

necessity for that apperture in swimming. It is meant for eating and for talking, but was never intended for breathing, which is the only function a swimmer regards.

Swimming, therefore, resolves itself into the ability to keep the nostrils above water, and the difficulty lies in the fact the nostrils are set in the heaviest part of the whole body, and that which is absolutely certain to sink below the surface unless continual efforts are being made to keep it in its right position.

On looking at the illustration it is evident that the simplest method of obtaining this object is to reverse the entire position of the body. Let, therefore, the learner be on his back, let him arch the spine in directly the opposite direction, and bend the head backwards instead of letting it hang forwards.

The result of this change of posture will be at once apparent. The heaviest part of the body, the back of the head, will be partly supported by the water, and partly by the air which fills the lungs. The nostrils will then become the lightest part of the body, and will, of course, be above the surface when the remainder is submerged.

Practically, the bather will find this result. If he will assume the attitude which has been thus described, and will be content to keep his lips tightly shut, and his limbs perfectly still, he will find that when he takes an inspiration the face will rise almost entirely out of the water. At each expiration the face will sink as far as the eyebrows and the lower lip, but no farther, the nostrils being always left free for the passage of air to the lungs.

Any one who will give this plan a fair trial will gain more real knowledge of swimming in an hour than can be obtained in a year by mere practical teaching. So powerful is the buoyancy of the water that if any one, whether he can swim or not, will lie in the attitude that has been described, and will not stir hand or foot, he cannot sink if he tries. A cork will sink as soon as he.

So impressed are we with the extreme value of floating on the back, that we recommend our readers to practice that and that alone until they feel perfectly competent that when they lie in

the proper attitude, the water cannot fail to support them. If the bather wishes to lie quite horizontally on the surface of the water he can do so by stretching his arms as far as possible over his head.

Their weight will counterbalance that of the legs, and will cause the toes to appear at the very surface. This position is sometimes called the Balance.

The directions which we have given are intended for those who are obliged to bathe in fresh water.

Those who are fortunate enough to bathe in the sea will find the lesson much easier.

The water supports the body so much more perfectly that even during an expiration the face seldom sinks lower than the chin, while a fair inspiration raises the whole face out of the water.

SWIMMING ON THE BACK.

The next division of our subject will be swimming on the back.

The power of floating on the back is invaluable to the beginner, but he soon begins to acquire something more.

It is very well to be able to float like a cork, but a swimmer wants to direct his course as well as to float like an inanimate object.

When the learner has acquired the art of lying on his back without moving hands or feet, let him gently paddle with his hands, keeping the fingers together firmly, and scooping the water, as it were, towards his feet.

He must be careful to keep the hands below the surface, and the hands well back.

Most persons, when beginning this movement, are tempted to raise the head so as to see whether they are moving, or, if so, in what direction.

Consequently, the water no longer supports his head, its weight is thrown on the body, and down goes the swimmer.

When the learner can propel himself at a moderate pace head

first, he should turn his hands round and scoop the water towards his head, thus propelling himself with his feet first.

It will be found that the course can easily be directed merely by using one hand rather more forcibly than the other.

Having learned this simple paddling process, the young swimmer now begins to use his legs.

It is possible to paddle for a considerable distance by using one hands alone, and there are sometimes circumstances when this process is invaluable.

If, for example, the swimmer should be seized with the cramp in his legs, he is certain to be drowned if he does not have recourse to this expedient.

Of the cramp, and other dangers, we shall write presently.

Still, although the swimmer may be able to propel himself, it is a very slow process, and he naturally will wish to get on at a faster rate. This is done by striking out the legs, with the feet wide apart, and then bringing them together again.

These directions are simple enough: but something more must be mentioned.

People generally imagine that the progress of a swimmer is only caused by the pressure of the soles of the feet against the water, and the usual opinion is that the fastest swimmer is he who has the broadest and the flattest feet. Of course, the pressure of the feet has something to do with it, but the chief part of the work is done, not by the feet, but by the legs.

When the legs are spread, they enclose between them a mass of water of a wedge-like shape, and as they are drawn together the body is propelled forwards on exactly the same principle that a vessel is propelled by a screw. In fact the principle of the inclined plane comes into operation, and the swimmer urges his way onwards just as the sails of a windmill are driven round by the air, or the fan of a smoke-jack is turned by the ascending currents through the chimney, and as a fish shoots through the water by the vibration of its tail.

Any one who wishes to see in action the real principle of swimming, cannot do better than to avail themselves of opportunities to watch seals as they glide so swiftly and gracefully

through the water. There is no direct action at all, no scooping of the water with the fore-paws, which are kept pressed closely against the sides. But the two hinder paws are pressed tightly together, and moved backwards and forwards with a steady sweep, this alternate action giving precisely the same sort of wedge, or inclined plane, that is formed by the simultaneous action of a man's legs while swimming on his back.

Man, however, when he can swim well, exhibits this principle very clearly. When a good swimmer is lying on his back and propelling himself as fast as he can, he always gives a kind of half turn to the body, so as to obtain a screw-like action of the legs, thus increasing his speed without increasing the force of his stroke.

Steering the course is easily managed by means of the legs. If the left leg is allowed to remain still, and the right leg is used, the body is driven to the left, and *vice versa* when the left leg is used and the right kept quiet. The young swimmer must remember that when he brings his legs together they must be kept quite straight and the knees stiff. The toes should also be pointed, so as to offer no resistance whatever to the water.

Swimming on the back is a most useful branch of the art, as it requires comparatively little exertion, and serves to rest the arms when they are tired with the ordinary mode of swimming. All swimmers who have to traverse a considerable distance always turn occasionally on the back, They even in this position allow the arms to lie by the sides until they are completely rested, while at the same time the body is gently sent through the water by the legs.

Let swimming on the back be perfectly learned, and practiced continually, so that the young swimmer may always feel secure of himself when he is in that position.

The feet should be kept about twelve or fourteen inches below the surface of the water, as, if they are kept too high, the stroke is apt to drive the upper part of the head and eyes under the water.

It must always be remarked that it is impossible to arch

the spine too much, or to press the head too far between the shoulders.

SWIMMING ON THE CHEST.

We now come to swimming on the chest, which is the mode adopted by most persons, and which, together with swimming on the back, will enable the learner to perform any aquatic feat.

In order to begin with confidence, walk into the water until it is almost as high as the chest, and then turn towards the land so that every movement may carry you from the deeper to the shallower water. Next, place your hands in front of the chest, the fingers stiff and pressed together, and the thumb held tightly against the fore finger. Do not press the palms together, as too many books enjoin, but hold the hands with the thumbs together, the palms downwards and the backs upwards.

Now, lean gently forward in the water, pushing your hands out gently before you, until the arms are quite straight, and just before your feet leave the bottom, give a little push forwards. You will now propel yourself a foot or two towards the land. Try how long you can float, and then gently drop the feet to the ground. Be careful to keep the head well back and the spine arched.

Repeat this seven or eight times, until you have gained confidence that the water will support you a few seconds. The accompanying illustration shows the proper attitude.

Now go back to the spot whence you started, and try to make a stroke. Lay yourself in the water as before, but when the feet leave the bottom, draw them up close to the body, and then kick them out quickly. When they have reached their full extent, press them together firmly, keeping them quite straight and the toes pointed.

This movement will drive you onwards for a short distance, and when you feel that you are likely to sink, drop the feet as before. Start again and make another stroke, and so on until the water is too shallow.

At first you will hardly gain more than an inch or two at each

stroke, but after a little practice, you will gain more and more until you can advance three or four feet without putting the legs to the ground. It is a good plan to start always from the same spot, and to try in how few strokes you can reach the land. There is great interest in having some definite object in view, and one gets quite excited in trying to reduce the number of strokes.

The action of the legs may be seen in the illustration.

The next point is the movement of the arms.

In reality, the arms are more valuable in swimming than the legs, and for this simple reason: any one who has the use of his limbs at all is obliged to use his legs daily, and that to a considerable extent. However sedentary he may be, he must walk up and downstairs twice at least in the day. He must walk from one room to another. He must get into and out of his carriage, and walk a few paces to his office. And in all these little walks his legs have to carry the weight of the body, which, to set it at the least figure, weighs from seventy to ninety pounds.

The legs, therefore, are strengthened and hardened by continual practice; but the arms have scarcely anything to do. They hang quietly by the side, they rest on the knee or on the table, and their average work is comprised in turning over the leaves of books or wielding a pen. They are unaccustomed to hard work of any kind, and therefore fail as soon as they are put to severe and novel labor. They soon become tired, the muscles refuse to obey the orders of the mind, and in a few hours the arms are so stiff that they can be hardly used at all.

In a swimming match of any length, we should always look at the arms of the competitors rather than the legs, and we would invariably select as our favorite the man with the broadest and deepest chest and the most wiry arms.

Now for the use of the arms.

Place yourself with your face to the shore, as already directed, and make the stroke according to the regulations.

But, just before the force of the leg-stroke is exhausted, spread the arms as widely as possible, turn the palms of the

hands a little outwards, and bring them towards the hips with a steady, regular sweep.

This movement will have two effects. It will support the body, and it will continue the propulsive force which was just given by the legs.

Be very careful not to hurry this stroke, and especially not to shorten it. Beginners generally make six or seven little strokes, keeping their arms bent during the whole time; but in correct swimming the arms should be sent forward to their utmost length, and the hands brought to the hips in a slow, uniform sweep.

Let this be practiced over and over again, until it is perfectly learned.

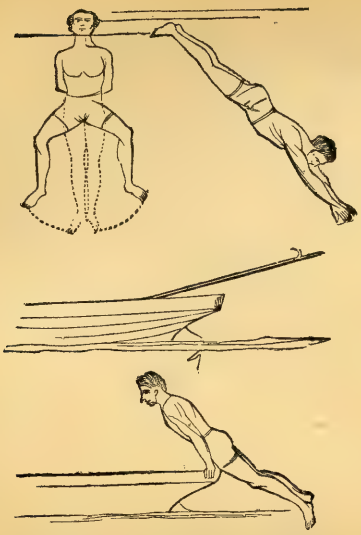
Even at home and on dry land it can be practiced with tolerable success, by lying on a chair in front of a large mirror, and making the stroke repeatedly until it looks quite exact. About eighteen or nineteen strokes to the minute is quite fast enough for all ordinary purposes. In a short race of a hundred yards or so, the quickness is of course increased, but if we were to swim a race of one or two miles, we should be content with eighteen, or at the most twenty, strokes per minute. In ordinary swimming, sixteen is our usual average. Still, we cover so much water at each stroke, that in the long run we come in far ahead of more showy swimmers, who wear themselves out in the first half mile, and then are caught and passed with ease.

A COMMON FAULT.

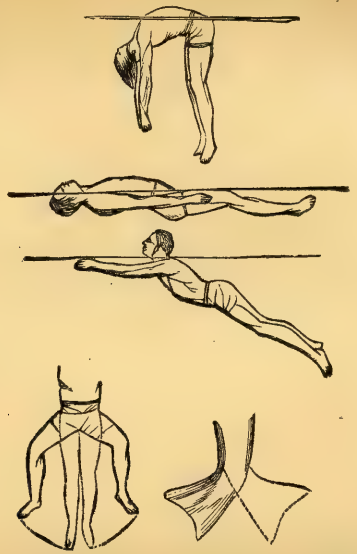
When swimming on the chest, take particular care to avoid an error into which the beginner almost invariably falls.

Being extremely anxious to keep the nostrils well above the surface of the water, the swimmer is apt to press downwards his hands, so as to raise his head and neck, and often part of the chest, completely out of the water.

Now, it is scarcely possible to make a worse mistake than this. By so doing the swimmer actually supports a consider-



DIVING. TREADING WATER.
GETTING INTO A BOAT.



DROWNING. FLOATING ON BACK.
SWIMMING ON CHEST.

able weight in the air, and might just as well hang some four or five pounds weight of lead round his neck. In the second place, he tires his arms most needlessly by forcing them to perform a totally unnecessary action. They will have quite enough work to do in making the ordinary stroke, without adding to them the labor of supporting the head above water.

The very principle on which all swimming is founded is that of making the water support the body, and, therefore, of supporting every part of the body by the water. If even a finger be lifted above the surface, the unsupported weight of that finger tends to press the body under water. A showy, or "high" swimmer may look well to an inexperienced eye, and may take the fancy like those lofty-actioned trotting horses, which are so appropriately called "flat-catchers."

But there is no endurance about either one or the other ; and it may be assumed as a self-evident fact that if two persons of equal strength enter in a match of any athletic exercise, and that one uses exertions which the other does not employ, the former will be tired sooner than the latter.

So, our advice to our readers is. First practice the stroke quietly and repeatedly, putting down the feet after each stroke is completed. Then try to manage two strokes without putting the feet to the ground. Then try three strokes, and so on, until you can make some four or five strokes without distress-yourself.

Having achieved thus much, make your mind easy. You have conquered the art of swimming. If you can make five strokes, you can make fifty, provided that you do not hurry them in trying to cover too much water at each stroke.

Should you feel yourself getting tired, or if a feeling of nervousness should come over you, the remedy is easy enough. Turn on your back, and paddle along quietly until your arms are rested. Then turn over and proceed on your course. So important is this one rule, that we repeat it again : Do not hurry your stroke. It is hardly possible for the learner to be too slow. One very good plan of learning a long and steady

stroke is to try in how few strokes a given distance can be traversed.

In connection with the ordinary breast stroke we must mention one very important point, namely, the manner of taking breath. If the swimmer lies, as he should lie, as low as possible in the water, he will find that at each stroke th water reaches to his lips, and will sometimes curl even over his nostrils.

If, therefore, he were to take an inspiration while he is making the stroke, he would immediately draw some water into his lungs, and the result would be that he would begin to choke and to cough, and would probably sink.

But, if he makes a habit of expelling the air from his lungs as he makes the stroke, he need fear no danger of the kind, for the expelled air will drive away the water, and even if his nostrils should be covered, they would not take in one slight drop. It naturally follows that the proper time to take breath is while the arms are just beginning to make the stroke, and when the force of the leg-stroke is almost expended.

Whilst we are on this point, we will just mention two cases in which it is extremely difficult to manage the breath. One is, when the swimmer is bathing in the sea, and when the wind has suddenly chopped round, as to knock up a cross sea.

We know nothing so worrying as a cross sea. There is no possibility of calculating upon it. All seems to be going on right, there is a nice smooth piece of water which seems as if it would last at least three strokes; suddenly up starts a watery hillock from the smooth green surface, its top becomes whitened with foam like the neck of a champagne bottle, and the wind picks off the foam and dashes it in the swimmer's face, stinging him as if every drop of water were a birch twig.

Then, just as the bather has revived from the sudden blows, and is trying to get a quiet bath, one of the regular waves comes rolling up, dashes in a solid mass over his head, and entirely disconcerts his projects.

We have swum in many a sea when the surface was as smooth as a mirror, and when it was rolling in huge mountain masses. But we never felt nervous about ourselves except on one occa-

sion, when a nasty rough cross sea was knocked up by a sudden change of wind. It was the first time that we had experienced a cross sea, and we did not like it—realizing indeed, for the first time, and we hope the last time in our lives, that water has an element that might be dreaded.

Now we know better, and care very little for a cross sea. Under such circumstances we only use one hand at a time, and whenever we wish to take a breath, we hollow the other hand and place it over the nostrils. Quite enough air can be drawn between the fingers ; but the water can make no resistance. Of course, this is rather an awkward looking method of swimming, but when we want air we think or care very little about looks.

The second case is when the swimmer is descending a fresh water rapid. Many a young man has been drowned by a rapid, when in reality he might have passed through the rushing waters without the least difficulty. We have often swum down rapids and cared nothing for them.

The novice is apt to lose his head at the rapidity with which he is whirled along, and at the great foam masses that leap over and about him. He should not, however, allow fear to enter his mind, for in ninety-nine cases out of a hundred it is fear that drowns a man.

Nothing is easier than going down a rapid. Do not try to swim at all, and never make a stroke unless you wish to alter your course ; but keep one hand over the nostrils, as above mentioned, and with the other and the feet keep beating the water, so as to raise yourself as high as you can out of it. Keep your legs as high as is consistent with holding the head well out of water, so as to avoid the chance of being caught in one of the whirlpools which are mightily prevalent in rapids, and which pull the swimmer under water as quickly as if his feet were tied to a weighted rope.

THE SIDE STROKE.

We now come to that particular stroke which, in our opinion, and in that of most professional swimmers, is by far the most valuable.

This is the celebrated side stroke, so called because the swimmer lies on his side.

There is no stroke that enables the swimmer to last so long as it does, and for this reason: instead of employing both arms and legs simultaneously in the same manner, the side stroke employs them simultaneously but in different manners; so that when the swimmer is tired of exercising one side he can just turn over and proceed with the other, the change of action resting the limbs almost as much as repose would do. Mr. Beckwith, the ex-champion of England, who held the belt for so many years, always employed the side stroke when swimming his matches, and the present champion follows his example. Indeed, out of all the professionals, there is scarcely one in twenty who adopts the old-fashioned breast stroke.

The side stroke is thus managed.

The swimmer lies on his right side, stretching his right arm out as far as he can reach, keeping the fingers of the right hand quite straight and the hand itself held edgewise, so as to cut the water like a shark's fin. The left hand is placed across the chest, with the back against the right breast, and the swimmer is then ready to begin.

He commences by making the usual stroke with his legs, and the right leg, being undermost, doing the greater share of the work. Before the impetus gained by the stroke is quite expended, the right arm is brought round with a broad sweep, until the palm of the hand almost touches the right thigh. At the same moment, the left hand makes a similar sweep, but is carried backwards as far as it can go.

The reader will see that the hands act directly upon the water like the blades of a pair of oars, and do not waste any of their power by oblique action.

In ordinary swimming we seldom use the left arm, but allow

it to hang quietly in the water, so that it may be perfectly ready for work when wanted. Then, after some little time, we turn round, swim on the other side, and give the left arm its fair share of labor.

There is a modification of swimming on the side, which is sometimes called thrusting, and sometimes the Indian stroke, because the North American Indians generally employ it.

These terms are rather vaguely employed, but the former is generally used when the swimmer thrusts his arm forward, and the latter when he swings it.

In performing this stroke, the swimmer starts upon his right side, and sweeps his right hand through the water as above mentioned. While that arm is passing through the water, the left arm is swung just above the surface with a bold sweep, the hand dipping into the water when the arm is stretched to its utmost. This movement brings the body over to the left side when the two hands change duties, the left being swept under the body while the right is swung forward.

This is rather a showy style of swimming, but we do not think very much of it. It certainly propels the swimmer with great rapidity for a time, but it requires so much exertion that he is sure to tire before very long. We recollect seeing a race for a silver cup, in which the merits and defects of this stroke were well shown. The swimmer shot ahead of all his competitors with ease, and if the course had been a short one, he would quickly have won.

But the course was a tolerably long one, and the consequence was that when he had traversed almost half the distance, his exertions began to tell on him, and his strokes got rather wild and irregular. Before very long some of the steadier swimmers began to creep up to him, and before two-thirds of the distance was traversed he was passed by two of them. The result of the race was, although he was well ahead half way, he did not even get a place at the finish.

VARIATIONS IN SWIMMING.

We now come to a few of the most useful variations in ordinary swimming.

The first of these is the stroke which is called treading water. This is employed when the swimmer wishes to raise his head as high out of the water as possible, and is particularly useful if he is reconnoitring, or if he is trying to save a drowning person, or if he wishes to grasp a bough or a rope above his head. The illustration shows the attitude that is assumed, and the best method of making the stroke is as follows :—Keep the body perpendicular, and make precisely the same stroke with the legs as is done in ordinary swimming. This action will keep the head freely out of the water, and if assisted by the hands the body will rise as far as the shoulders.

Some persons literally "tread" the water, striking each foot alternately as if they were ascending a staircase. We have thoroughly tried both methods, and much prefer the former.

SWIMMING LIKE A DOG.

The name of this method explains itself. The swimmer lies on his chest. and moves his hands and legs alternately, exactly as a dog does when swimming.

The chief use in this stroke is that it affords a change of action to the muscles, and if the swimmer has to traverse any considerable distance, say a mile or two, he will find that a few occasional minutes employed in swimming like a dog will be very useful in relieving the strain on the muscles of both legs and arms.

Having become tolerably expert at these exercises, the young swimmer should now learn to support and propel himself, first, without his hands, and next, without his legs.

He should therefore place the hands along the sides of the body, sink the legs much deeper than in ordinary swimming, and make a succession of strokes with the legs. These strokes should be much shorter and quicker than are used when the hands are at liberty.

Next, suppose that the hands are tied at the wrists, and that the swimmer is a manacled captive trying to escape across a moat. Press the hands tightly together, with the fingers close to each other, and the whole hand made as flat as possible. Turn slightly on the left side, making the ordinary stroke with the legs, and bring the hand towards the left hip with a quick sweep, taking care to part them from it as soon as the stroke is made.

Then, try to swim without the legs. Allow the feet to hang as low as they like, keep the head well back, and make the ordinary stroke with the hands. But, instead of merely bring them back, press them down at every stroke, so as to lift the chin out of the water. This is a very slow business, but still it should be practiced, as the swimmer may happen to disable his legs and ought to know how to manage without them.

Lastly, he should learn to swim when both hands and feet are tied together. This feat is a very superior one, and always elicits much applause from spectators, being what is technically named a "gallery" stroke. Yet it is really very easy and can be performed by any one who has practiced the two former exercises.

Hold the hands together, as already mentioned, and press the feet together at the ankles. Then, giving short, sharp strokes, the hands and feet working about, but not quite simultaneously.

If you are performing this feat before spectators, add to the effect by tying the hands and feet with handkerchiefs. Swimming is not made more difficult by the ligatures, while the appearance of difficulty is very much increased.

DIVING.

Having now tolerably mastered the surface of the water, the learner must proceed to explore its depth. It is, of course, a great thing to be able to support the body in the water; but the swimmer's education is only half completed until he knows

how to dive. Many lives have been saved by the ability to dive, many have been lost from its absence.

Many a man has saved his own life, when escaping from enemies, by diving and swimming under water to some place of refuge, or by passing along out of sight of his enemies, merely allowing his nostrils to appear above the surface at intervals. Many a man—and woman, too—has saved the life of another by diving after the sunken body and bringing it to the surface before life was extinct. Therefore, our counsel is, that the young swimmer learn to dive without delay.

The first object is to keep the eyes open while under the water. In order to do this, sink yourself well under the surface, hold your hand before your face, and try to look at it. Don't be afraid of water getting into the eyes. A chance drop of fresh water flirted into the eyes will make them smart, but you may keep your eyes open even in salt water as long as you like without the least irritation.

Some persons recommend that the first experiment be made with a basin of water, in which the head is to be plunged. We specially recommend that this should not be done, and that the first experiment should be made while bathing.

When the young swimmer has learned that he really can keep his eyes open under water, he should drop to the bed of the sea or river, where it is about four feet in depth, some white object—one of the well-known alabaster eggs used for deluding sitting hens is as good an object as can be found. Still, a lump of chalk, a thick gallipot, or anything of a like nature, will do very well.

Now, try to stop and lift the egg, and you will find two results. The first is that the egg will look as large as a hat, and the second is, that you will find very great difficulty in getting to it.

Now, try another way of getting to the egg. Drop it as before, spring up as high as the waist, bend your body well forward, throw the feet in the air, and try to reach the egg, head foremost. At first you will find this rather difficult, but after a little practice, it will come easily enough. Be careful to stand

at some little distance from the egg, or you will be sure to overshoot it.

Next drop the egg, go back some eight or ten yards, swim towards the object, and dive for the egg, from the swimming posture. This is not very easy at first on account of the difficulty in getting the chest below the surface. If, however, the legs are thrown well up in the air, the weight forces the body under water.

The next object is to try how far the swimmer can proceed under water.

Swimming under water is managed in nearly the same manner as swimming on the surface. But in order to counteract the continual tendency upwards, the swimmer must always keep his feet considerable higher than his head, so that each stroke serves to send him downwards as well as forwards.

One of the chief difficulties in diving is to keep a straight course, because there is seldom anything under water by which to steer. In a river, when the water is clear, it is generally easy to look upwards and watch the trees, posts, or other objects on the banks; but in the sea it is very different business, and the swimmer must have learned to make his stroke with great regularity before he can dive in a straight line.

It is hardly possible to give too much time to diving. The learner should first take nothing but easy diving, such as have been mentioned, and then try to achieve more difficult feats. He should learn to dive at a considerable distance from any object, swim towards it by guess, and try to bring it towards the surface. He should throw two, three, or more eggs into the water, and try how many he can recover at a single dive. When he has attained a sufficient mastery over the water, he should stand on the bank, or in a boat, throw an egg into the water, dive after it, and catch it before it reaches the bottom.

This is a favorite feat of ours, and when we were yet in the jacketed state of humanity, we used to secure many a penny and occasional sixpences by thus diving after them, the copper coins being wrapped in white paper to make them more visible. Sixpences were easy enough to see, but not so easy to

catch, because their flat form and light weight made them move backwards and forwards instead of descending steadily through the water.

THE HEADER.

Now the young swimmer must learn how to enter the water in a proper and graceful manner. It is as easy to enter the water gracefully as clumsily, and only requires a little care at first.

Most beginners are dreadfully alarmed when they are told to jump into the water first. They cannot rid themselves of the instinctive idea that their heads will be dashed to pieces. Consequently, when they try the "header" they only come flat on the water with a flop, and a great splash, and hurt themselves considerably, the blow against the water having almost as stinging an effect as a stroke from a birch rod.

Therefore, let not the beginner try too much at first. He should go to the bank of a river where the water is only a few inches below him, and there make his first attempt at a header. He should stoop down until he is nearly double, put his hands together over his head, lean over until they nearly touch the surface, and so quietly glide, rather than fall, into the water. At first he will be sure to lose the proper attitude, but in a little time he will manage without difficulty. This should be done over and over again, and each time from an increased height.

Next, the learner should take a short run, and leap head-first into the water from the place where he took his first lesson at plunging, so that the water is no great distance from him.

He should then remain quite stiff, straight, and still, and see how far his impetus will carry him. This is technically termed "shooting." At last he should accustom himself to leap from a considerable height, say from ten to twenty feet, and to do so either running or standing.

It is our firm belief that when the young swimmer has once ventured to jump from a height of ten feet, he will not be in the

least alarmed at thirty or forty feet. At first there is a curious sensation as if all the internal machinery of the body were left in the air, the feeling very soon goes off, and the diver quite enjoys the rapid rush through the air. The oddest thing is, that he does not seem to be falling, but the water seems to rise up and meet him.

Also, he should practice leaping into the water at a distance from the bank, and also should try to leap over obstacles, such as reeds, branches, or similar obstructions. Very good practice may be gained by fixing a couple of upright sticks in the ground close to the bank, tying a string across them, and going head-foremost over it. Of course, the string should be set low at first, and its height increased by degrees. The height over which an experienced person can leap is really astonishing. The great difficulty is to avoid catching the string with the knee, and this brings us to and axiom in all diving from a height.

Keep the body. arms, and legs perfectly stiff, and all in the same right line.

Any one who will do this can leap from extraordinary heights without the least fear of danger. The hands, joined over the head, form a kind of wedge, which cuts its way into the water and opens a passage into which the body passes. The head is so bent over the chest, that even the slight shock which ensues when the water is reached only effects the crown of the head, which is the part which is best able to bear it.

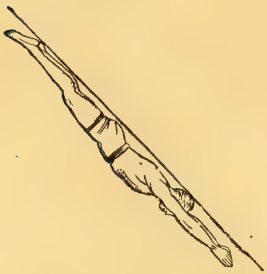
Those who wish to see the attitude of the body in perfection, cannot do better than watch the ex-champion of England, Mr. Beckwith, while performing his well-known series of aquatic feats. As he passes through the air from the elevated leaping-board, his body and limbs become as straight as a dart, and as stiff as if he were a statue carved out of wood.

When he reaches the water, there is not the least alteration of attitude, and he shoots through the water like a fish, traversing a wonderful space by the impetus of a single spring.

In jumping from a boat, the best way is to go to the stern and leap over, as there is no more resistance to the feet than is obtained by leaping over the side ; and in getting into the boat

again, always come to the stern, never to the side. Swim towards the boat with the feet high. Grasp the stern in both hands and kick the feet on the surface of the water, so as to keep them up; otherwise, the legs will be sucked under the boat.

Then give a vigorous kick with the feet and spring with the hands, and you will be lying on your breast over the stern, and to crawl fairly into the boat is then easy enough.



SWIMMING LIKE A DOG.

"SHOOTING."

MISCELLANEOUS INSTRUCTIONS.

In this, the concluding chapter, we give our readers some instructions which will be found of great practical use.

In the first place, practice every possible method of keeping afloat under disadvantageous circumstances, so that if any accident should happen, you may always know instinctively what to do, and may do it without having to think about it.

In the first place, when a boat is upset, or when an accidental

fall into the water takes the clothes are always found to be a serious impediment.

It is true that they are partly supported by the water, but they are always heavy, and most troublesome to the wearer, especially coat and boots.

So worn-out suit to the water-side, put them on when you enter the water, and try how long you can swim them.

There is no great difficulty in swimming a short distance when thus encumbered, but for a long distance they are almost unbearable.

Practice, therefore, to take them off while in the water.

First, take off the coat, by treading water, and releasing one arm at a time.

the coat well away, so as to be clear of it, and then set to work at the boots.

These very troublesome articles of apparel to remove. Lie on the back, bend the right leg, get the foot in front, and with one hand loose all laces or buttons.

Then, with heel of the other foot, get the boot half off, but no more.

Go through the same process with the left foot, and you will find that both boots can be taken off without much difficulty.

If the trousers are heavy, remove them also.

This is done by lying on the back, and giving little, short strokes with the feet, while the hands are employed in unfastening the buttons and slipping the garment as low as the knees.

Then paddle with the hands, giving a shake every now and then with the feet, and the trousers will generally slip off of their own accord.

If they do not, a hand judiciously employed will soon complete the operation.

CRAMPS.

We will now mention that terrible swimmers' bane, the cramp.

Perhaps more good swimmers have been drowned by cramp than by anything else, and only those who have suffered from it can conceive its fatal power.

Strong men and good swimmers, when seized with the cramp, have been known to sink instantly, overcome with the sudden pain; and nothing can save the victim but the greatest presence of mind.

The usual spot where the cramp is felt is the calf of the leg, just below the knee; and it sometimes comes with such violence that the muscles are gathered up into knots.

There is only one method of proceeding under such circumstances.

Turn on the back at once, kick out the leg in the air, disregarding the pain, and rub the spot smartly with one hand, while the other is employed in paddling towards shore.

These directions are easy enough to give, but most difficult to be obeyed; cramp seems to deprive the sufferer of all reason for the time, and to overpower him with mingled pain and terror.

Still, there is no other hope of reaching shore than that which is here given.

The causes of cramp are generally twofold.

The principal cause lies in indigestion, for it is seldom that a person in really good health is attacked by this malady.

The second reason is over-exertion of muscles that have been little used, and therefore, too strong a leg-stroke should always be avoided.

Another thing which demands great practice, is the method of saving a drowning person.

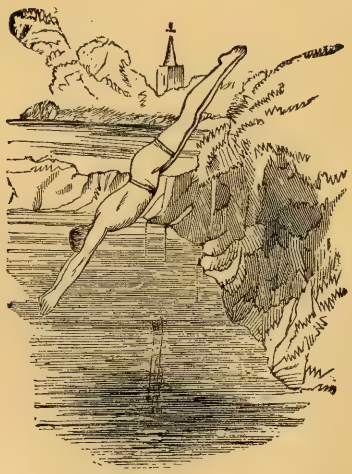
The chief difficulty lies in the fact, that a person who can not swim feels, in deep water, much as if he were falling through air, and consequently clutches instinctively at the nearest object.

And if he succeeds in fixing a grasp upon the person who is trying to save him, both will probably sink together.

Therefore, every precaution should be taken to prevent such a misfortune, and the drowning man should always be seized from behind, and pushed as it were in front.

Should he succeed in fixing his grasp, the only remedy is to dive, when it will be found that he will loosen his hold in finding himself below the surface, and will allow his rescuer to take a better position.

We used to practice this art, each in turn acting the part of a drowning person, and trying to grasp our companion, who was trying to bring us ashore. It was capital practice, and one that is much to be recommended.



A HEADER.

PART SECOND.

PRELIMINARY REMARKS ON CRICKET.

This treatise being intended only as a handbook of the game of Cricket, I have thought best to confine myself purely to the theory and practice of the game, considering all else to be fairly considered beside its scope and object, and therefore out of place.

Many people may say—indeed, many *do* say—"Where is the use of a book on cricket? Can cricket be read up?" To which I answer most emphatically, 'Yes!' as much as chess, or any other game. Yes, criket can be read up. Of course I do not mean to say that reading alone can or will make a cricketer; but I can unhesitatingly affirm that the hints and directions that are given in any good work on the subject will be found an invaluable adjunct to the purely mechanical practice in the field.

It is true that practice under the personal supervision of a good player, is from every point of view, most important—but then it is only a comparatively few who can obtain the services of a good instructor, so that for the rest it is book-teaching, or no teaching at all; and cricket by the light of nature, is a creation of strange and wonderful proportions.

Book-teaching, therefore, in the absence of downright personal instruction, is by no means to be despised; and even with it, it may be of service by fixing in the memory the various hints and directions received amid the directions of play, and therefore liable to be forgotten, or but feebly remembered. The book, too, has this further advantage, that each several player may extract from it at will that information of which he

at the moment finds himself most in need, and even correct his tendency to any fault before it be formed into a habit, and its actual commital attract the attention of the instructor.

It may be still further objected that as cricket is only a game it is scarcely worth while to take such extreme pains, and devote so much study to its pursuit.

I have not space here to convince such, if they be worth convincing. I write only for those who take up this game as they should take up everything in life, with a firm intention and endeavor to do in it to the best of their ability, in accordance with the old adage, "What is worth doing at all, is worth doing well."

As for half-hearted players, fellows who field with hands in pockets, one eye on the ball, and the other on every bird that flies—that wander about the field restlessly till it is their turn to go in, and then have to be called up with much shouting and gesticulation, whose sole idea of cricket is batting, and who look upon fielding as a necessary evil, to be taken in as small doses and slurred over as quickly as possible—to such this treatise will be useless, because incomprehensible; they will not understand my earnestness, as I certainly cannot understand their apathy.

Let them conquer their sloth, learn to take some real interest in the game beyond the mere selfish consideration of themselves making so many runs, and have some consideration for the pleasure of their fellows in the game, and I shall have somewhat to say to them.

The following are the rules, universally accepted in their integrity, as published by the Marylebone (London) Club, the parent Cricket Club of the world.

THE LAWS OF CRICKET.

THE BALL.

1. Must weigh not less than five ounces and a half, nor more than five ounces and three-quarters. It must measure not less than nine inches, nor more than nine inches and one quarter

in circumference. At the beginning of each innings either party may call for a new ball.

THE BAT

2. Must not exceed four and a quarter inches in the widest part; it must not be more than thirty-eight inches in length.

THE STUMPS

3. Must be three in number; twenty-seven inches out of the ground; the bails eight inches in length, the stumps of sufficient and equal thickness to prevent the ball from passing through.

THE BOWLING CREASE

4. Must be in a line with the stumps; six feet eight inches in length, the stumps in the centre, with a return crease at each end towards the bowler at right angles.

THE POPPING CREASE

5. Must be four feet from the wicket, and parallel to it; unlimited in length, but not shorter than the bowling crease.

THE WICKETS

6. Must be pitched opposite to each other by the umpires, at the distance of twenty-two yards.

7. It shall not be lawful for either party during a match, without the consent of the other, to alter the ground by rolling, watering, covering, mowing, or beating, except at the commencement of each innings, when the ground may be swept and rolled at the request of either party, such request to be made to one of the umpires within one minute after the conclusion of the former innings. This rule is not meant to prevent the striker from beating the ground with his bat near to the spot where he stands during the innings, nor to prevent the bowler from filling up holes with sawdust, &c., when the ground is wet.

8. After rain the wickets may be changed with consent of both parties.

THE BOWLER

9. Shall deliver the ball with one foot on the ground behind the bowling crease and within the return crease, and shall bowl four balls before he change wickets: which he shall be permitted to do only once in the same innings.

10. The ball must be bowled. If thrown or jerked, the umpire shall call, "No ball."

11. He may require the striker at the wicket from which he is bowling to stand on that side of it which he may direct.

12. If the bowler shall toss the ball over the striker's head, or bowl it so wide that in the opinion of the umpire it shall not be fairly within the reach of the batsman, he shall adjudge one run to the party receiving the innings, either with or without an appeal, which shall be put down to the score of "wide balls;" such ball shall not be reckoned as one of the four balls: but if the batsman shall by any means bring himself within reach of the ball, the run shall not be adjudged.

13. If the bowler deliver a "no ball" or a "wide ball," the striker shall be allowed as many runs as he can get, and he shall not be put out except by running out. In the event of no run being obtained by any other means, then one run shall be added to the score of "no balls" or "wide balls," as the case may be. All runs obtained for "wide balls" to be scored to "wide balls." The names of the bowlers who bowl "wide balls" or "no balls" in future to be placed on the score, to show the parties by whom either score is made. If the ball shall first touch any part of the striker's dress or person (except his hands), the umpire shall call "Leg bye."

14. At the beginning of each innings the umpire shall call "Play;" from that time to the end of each innings no trial ball shall be allowed to any bowler.

THE STRIKER IS OUT

15. If either of the bails be bowled off, or if a stump be bowled out of the ground;

16. Or, if the ball, from the stroke of the bat or hand, but not the wrist, be held before it touch the ground, although it be hugged to the body of the catcher;

17. Or, if in striking, or at any other time when the ball be in play, both his feet shall be over the popping crease, and his wicket put down, except his bat be grounded within it;

18. Or, if in striking at the ball he hit down his wicket;

19. Or, if under pretence of running, or otherwise, either of the strikers prevent a ball from being caught, the striker of the ball is out;

20. Or, if the ball be struck, and he wilfully strike it again;

21. Or, if in running, the wicket be struck down by a throw, or by the hand or arm, with ball in hand, before his bat, in hand, or some part of his person be grounded over the popping crease. But if both the bails be off, a stump must be struck out of the ground;

22. Or, if any part of the striker's dress knock down the wicket;

23. Or, if the striker touch or take up the ball while in play, unless at the request of the opposite party;

24. Or, if with any part of his person he stop the ball, which, in the opinion of the umpire at the bowler's wicket, shall have been pitched in a straight line from it to the striker's wicket, and would have hit it;

25. If the players have crossed each other, he that runs for the wicket which shall be put down is out.

26. A ball being caught no run shall be reckoned.

27. A striker being run out, that run which he and his partner were attempting, shall not be reckoned.

28. If a lost ball be called, the striker shall be allowed six runs; but if more than six shall have been run before lost ball shall have been called, then the striker shall have all which have been run.

29. After the ball shall have been finally settled in the wicket keeper's or bowler's hands, it shall be considered dead: but when the bowler is about to deliver the ball, if the striker at the wicket go outside the popping crease before such actual delivery, the said bowler may put him out, unless [with reference to the 21st law] his bat in hand, or some part of his person be within the popplng crease.

30. The striker shall not retire from his wicket and return to it to complete his innings after another has been in, without the consent of the opposite party.

31. No substitute shall in any case be allowed to stand out or run between wickets for another person without the consent of the opposite party: and in case any person shall be allowed to run for another, the striker shall be out if either he or his substitute be off the ground in manner mentioned in Laws 17 and 21, while the ball is in play.

32. In all cases where a substitute shall be allowed, the consent of the opposite party shall also be obtained as to the person to act as substitute, and the place in the field which he shall take.

33. If any fieldsman stop the ball with his hat, the ball shall be considered dead, and the opposite party shall add five runs to their score; if any be run they shall have five in all.

34. The ball having been hit, the striker may guard his wicket with his bat, or with any part of his body except his hands, that the 23rd Law may not be disobeyed.

35. The wicket-keeper shall not take the ball for the purpose of stumping until it shall have passed the wicket: he shall not move until the ball be out of the bowler's hand: he shall not

FIG. 1.

FIG. 2.

FIG. 3.

FIG. 4.

by any noise incommode the striker: and if any part of his person be over or before the wicket, although the ball hit, the striker shall not be out.

36. The umpires are the sole judges of fair or unfair play, and all disputes shall be determined by them, each at his own wicket: but in case of a catch which the other umpire at the wicket bowled from cannot see sufficiently to decide upon, he may apply to the other umpire, whose opinion shall be conclusive.

37. The umpires in all matches shall pitch fair wickets, and the parties shall toss up for choice of innings. The umpires shall change wickets after each party has had one innings.

38. They shall allow two minutes for each striker to come in, and ten minutes between each innings. When the umpire shall call "Play," the party refusing to play shall lose the match.

39. They are not to order a striker out unless appealed to by the adversaries;

40. But if either of the bowler's feet be not on the ground behind the bowling crease and within the return crease when he shall deliver the ball, the umpire at his wicket, unasked, must call "No ball."

41. If either of the strikers run a short run, the umpire must call "One short."

42. No umpire shall be allowed to bet.

43. No umpire is to be changed during a match, unless with the consent of both parties, except in case of violation of the 42nd Law; then either party may dismiss the transgressor.

44. After the delivery of four balls the umpire must call "Over," but not until the ball shall be finally settled in the wicket-keeper's or bowler's hand; the ball then shall be considered dead: nevertheless, if an idea be entertained that either of the striker's is out, a question may be put previously to, but not after, the delivery of the next ball.

45. The umpire must take especial care to call "No ball" instantly upon delivery: "Wide ball" as soon as it shall pass the striker.

46. The players who go in second shall follow their innings, if they have obtained eighty runs less than their antagonists, except in all matches limited to only one day's play, when the number shall be limited to sixty instead of eighty.

47. When one of the striker's shall be put out, the use of the bat shall not be allowed to any person until the next striker shall come in.

NOTE. The Committee of the Marylebone Club think it desirable that, previously to the commencement of a match, one of each side should be declared the manager of it: and that the new laws with respect to substitutes may be carried out in a spirit of fairness and mutual concession, it is their wish that such substitutes be allowed in all reasonable cases, and that the umpire should inquire if it is done with the consent of the manager of the opposite side.

Complaints having been made that it is the practice of some players when at the wicket to make holes in the ground for a footing, the Committee are of opinion that the umpires should be empowered to prevent it.

THE LAWS OF SINGLE WICKET.

1. When there shall be less than five players on a side, the bounds shall be placed twenty-two yards each in a line from the off and leg stump.

2. The ball must be hit before the bounds to entitle the striker to a run, which run cannot be obtained unless he touch the bowling stump or crease in a line with his bat, or some part of his person, or go beyond them, returning to the popping crease, as at double wicket, according to the 21st Law.

3. When the striker shall hit the ball, one of his feet must be on the ground, and behind the popping crease, otherwise the umpire shall call "No hit."

4. When there shall be less than four players on a side, neither byes nor overthrows shall be allowed, nor shall the striker be caught out behind the wicket, nor stumped out.

5. The fieldsman must return the ball so that it shall cross the play between the wicket and the bowling stump, or between the bowling-stump and the bounds; the striker may run till the ball be so returned.

6. After the striker shall have made one run, if he start again he must touch the bowling-stump and turn before the ball cross the play, to entitle him to another.

7. The striker shall be entitled to three runs for lost ball, and

the same number for ball stopped with hat, with reference to the 28th and 33rd Laws of double wicket.

8. When there shalll be more than four players on a side, there shall be no bounds. All hits, byes, and overthrows shall then be allowed.

9. The bowler is subject to the same laws as at double wicket.

10. Not more than one minute shall be allowed between each ball.

OBSERVATIONS ON RULES 3, 4, AND 5.

The use of the 'bowling crease' is to insure the delivery of the ball from a point not nearer to the batsman than the opposite wicket; the bowler *may* deliver, though he would hardly care to do so, from any distance behind the crease; the rule only insists that at least one foot shall be behind it.

The *return crease* is to keep the bowler within reasonable limits as to lateral deviation from the wickets.

This is a matter of no slight importance, as it is evident that any material edging off to one side would completely stultify all attempts of the batsman to obtain a correct guard, and would moreover, leave him constantly uncertain as to the precise spot from which the ball would be delivered, and thus render a csrrect defence impossible.

The use of the *popping crease* is to confine the batsman to his wicket, and to mark out some definite space as his ground, beyond which he can stir only at the risk of being run out or stumped out.

Were there no distinct mark, umpires would be unable to come to a satisfactory decision in cases of delicacy, where an inch more or less is a matter of life or death to the batsman; and umpires should, therefore, be very careful that the popping crease is accurately and distinctly traced.

Its length is unlimited, that a player may not be put out for running to one side of his ground, a practice not much to be commended, certainly, when unnecessary, but one which is sometimes unavoidable in case of a rush of fielders between wickets.

A player should of course, when practicable, take the nearest and, therefore, the straightest line between the wickets; but when the way is not clear, a slight run round is often good policy.

Rule 9. 'One foot' means here any part of one foot. Some umpires, specially amateur, are strongly impregnated with the idea that it is possible to deliver the ball with one foot before the crease and the other behind it, but off the ground—and call 'no ball' accordingly, to the extreme discomfiture of any round-arm bowler with a lively delivery, who happens to come within reach of their tender mercies.

Now, this supposed 'No ball' is simply a physical impossibility; let any man try to bowl—not chuck—but fairly bowl a ball with only the forward foot on the ground, and he will be convinced of the fact at once.

Another delusion, also very common, is, that fast bowlers drag their latter foot after them over the crease *before* delivery, and thus, of conrse, give 'no balls.'

This, too, is almost an impossibility; the real fact is, as every one who will take the trouble to think must see at once, that the ball cannot be 'bowled' with any force or bias except from the firm fulcrum of the hinder foot, and consequently that any appearance of movement before the ball is delivered arises from defective judgment on the part of the umpire as to the correct sequence of the two events.

'Shall bowl *four* balls.' This rule may be, and is subject to agreement between the two parties playing. It is usual to play five balls or six to the over in one-day matches.

'Shall change wickets only once in one innings.' This is to prevent unfair advantage being taken by changing constantly

a crack bowler from end to end to the manifest detriment of the opponents.

Rule 10. 'The ball must be bowled, not thrown or jerked.' The difference between throwing and bowling is very difficult to define in words, though in its main features easy enough in action; there are, though, forms of bowling very difficult, if not impossible, to distinguish from throwing. These must be left to the umpire.

Practically an umpire will not interfere, unless the bowler's style be palpably unfair.

A ball is jerked when the hand or arm is at the moment of delivery arrested suddenly by contact with the side.

This jerking imparts to the ball, in some mysterious way, a life and fury highly dangerous to the batsman; and is for this reason sternly prohibited.

No umpire, however lax upon the subject of throwing delivery, would tolerate for a moment the least approach to a jerk.

Rule 12. The umpire in this case, as in some others, must use his own judgment as to the ball passing within reach. A deal depends on the height of the batsman, a tall man having, of course, a longer reach than a short one. Should a ball that has been called 'wide' be hit, the wide is *ipse facto* annulled, and must not be scored.

Rule 13. 'All runs obtained from wide balls to be scored to wide balls.'

This only applies to scores got from them as 'byes'—upon the principle that the bowler, and not the long-stop is responsible for an deficiency in the fielding.

Hits—as see last rule—are not contemplated in this direction.

Rule 14. 'No trial shall be allowed.' This does not inhibit a bowler from taking advantage of a pause in the game to try his hand with a ball or two at the side of the wickets; he must only be careful not to impede the course of the game.

Rule 17. The ground is measured from crease to crease—*i. e.* from Popping-Crease to the Bowler's crease; the foot must

therefore be inside the Popping crease. If it be only on the crease, and the wickets be put down, the player is out.

Rule 19. The umpire must judge whether the interference with the catch has been accidental or intentional, and decide accordingly.

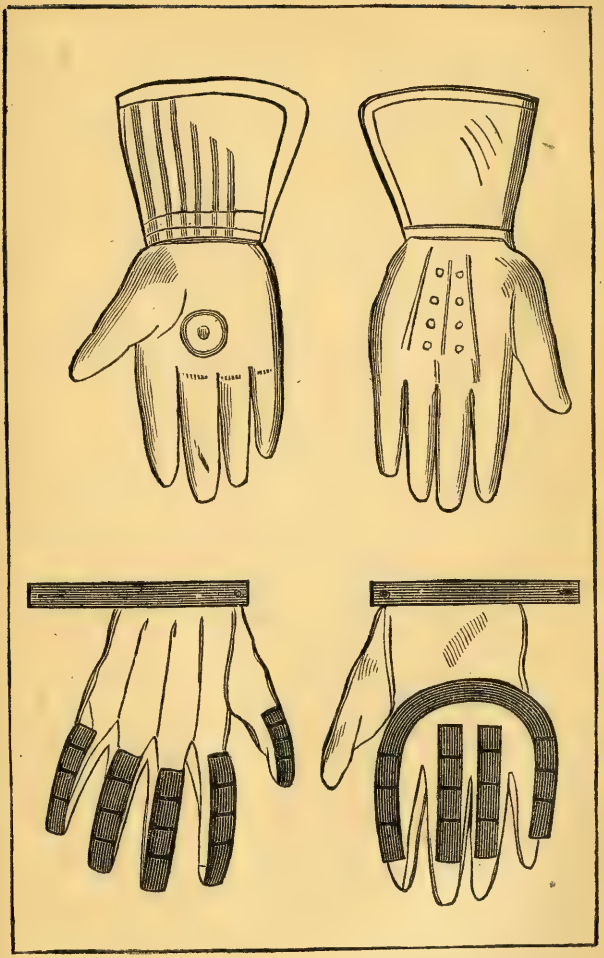
Rule 20. A player may block or knock the ball away from his wickets after he has played it; he only may not strike it with a view to run-getting.

Rule 24. There is a good deal of difficulty about the application of this rule. As it stands, no round-arm bowler not bowling over the wicket ever can get a man out "leg-before" unless with a "break-back ball." It has been proposed, with some show of reason and expediency, that the rule shall stand thus: "Any ball that, in the opinion of the umpires, would have hit the wicket." The test of actual practice can alone prove the real value of the proposed amendment. It must be remembered that a man may be out *head* before wicket; the only part of the person excepted is the hand from the wrist downward.

Rule 29. Here again, the umpire must rely wholly upon his own discretion. He must judge by the wicket-keeper's manner whether the ball be settled or not.

Rules 30, 31, and 32. Courtesy will always grant the required consent in all cases of real emergency; but courtesy and right feeling equally demand that no advantage shall be taken of the concession. If a man be partially incapacitated after a match is made up, a request for consideration is quite right; but no man ought to be deliberately played with the foreknowledge of his inability to discharge all his duties, and with the intention of supplementing his weak points by a substitute.

Rule 35. Umpires should pay special attention to this rule. As an actual fact, few but regular professionals have sufficient regard to its requirements and attentions. One reason is, that with a sharp, eager wicket-keeper, it makes no slight demand upon the umpire's keenness and attention to enforce the rule in its integrity, not to mention the necessity of no little firmness



and decision, in checking any infraction of its regulations.

Rule 38. This rule is aimed against those persons, of whom, sad to say, there are too many in the world who are ready to take advantage of every omission and flaw in a law or a rule—the principle is the same—that can for the moment turn to their own benefit. In playing the game each side should play to win, and play its very best; but a victory won by sharp practice is no victory at all, and a defeat staved off by similar means is a defeat still.

THE LAWS OF SINGLE WICKET.

Single wicket is not to be spoken of when double wicket is practicable, though I would qualify this if the double wicket were only possible with a tail of inferior players; better play a short-handed game at single wicket with good players than a full-sided game at double wicket with inferior players.

There is nothing more deteriorating than play with inferior players; nothing more improving than play with superiors.

Single wicket, however, has one very useful quality; there is no better practice for hard hitting than a single-wicket match, with a bowler and two or three men in the field.

It is really astonishing the distance the ball must be hit with even only two good men in the field to get the one run.

To any one deficient in hard forward hitting I can recommend no better practice than a course of single wicket. I can in my own person testify strongly to the efficiency of the prescription.

Peddling about in one's blockhole is all very well—sometimes—at double wicket when the other batsman is making the runs, and all depends upon keeping the wickets up, but it does

not pay in the long run, and what is more to the purpose, it is not Cricket.

GENERAL EQUIPMENT.

A few words upon the choice of bats, balls, &c. Too much pains cannot be taken by the cricketer in thus providing his outfit.

None but an experienced hand *can* estimate the vital importance of attention to all such details:—that the bat is the right weight, and properly balanced; that the shoes, gloves, and pads are perfect in their fit and appointment; in fine, that the player stand at the wickets, or in the field, fully equipped for the fray, yet no wise impeded or hindered by ill-fitting garments, clumsy shoes, or cumbersome pads.

First, then, for the bat. This is limited in rule 2 both as to length and width, but the thickness and weight are left to the fancy or capacity of the player. In a general way, a tall man can use a heavier bat than a short one.

About two pounds is a fair weight for a player of middle weight and medium muscular development.

Although it is a great mistake to play with a bat that is too heavy to handle with ease, yet the opposite extreme is none the less to be avoided.

Too heavy a bat cramps the play, and entirely prohibits that beautiful wrist play that is the 'ne plus ultra' of good batting —but on the other hand, one that is too light is useless for hard hitting, and can do little in the way of run-getting as against a good field; anything like a swift "shooter," too, will be apt to force its way past its impotent defence.

The points we must look for in a bat are these:—first, weight suited to the player; secondly, good thickness of wood at the 'drive'—*i. e.*, about four inches from the end, at which point the bat should be not less than one and three-quarters, or two

inches in thickness, gradually tapering off up and down towards the end and towards the handle; thirdly, balance, so that when weilded there may be no sensation of deadweight at the end, as is painfully perceptible in all badly balanced bats —experience alone can teach the right 'feel' of a bat.

The outward appearance of bats should by no means be invariably taken as a true indication of their inherent merits; very often a very plain, unstylish-looking bat is worth a dozen well-got-up, taking-looking specimens, amongst which it may be placed; but the eye of a real connissieur will pick out at once a likely bat from amidst a whole crowd of others.

Nevertheless, nothing but actual trial of each individual 'bit of willow' can bring out all its inherent qualities, good, bad, or indifferent.

Too much stress should not be placed on the possession of a first rate bat; good tools cannot make a good workman, nor a fine bat a fine batsman.

Yet, still, the good workman is not at his best without his old familiar tools, and in like manner the cricketer plays best with a well-approved bat in his hand.

It is a very common thing to hear men begging the loan of a bat that, in the hands of some skillful player, has just run up a long score, as if the virtue lay in the instrument, not in the skill of its user.

It may also be generally, almost invariably observed, that such men, although armed with the talismanic weapon, scarcely add much to its run-getting reputation.

A really good player will make runs with almost anything— a hedge-stake or a broomstick.

By-the-way, these are not such inefficient weapons as might be supposed.

But some specimens are so deficient in the requirements of a good bat, that the best use they can be put to is to be burnt.

Bats vary, also, very much in price, as well as in make: and price varies in different localities.

BALLS AND WICKETS.

As regards balls and wickets, it will be found better economy to purchase a good article in the beginning.

With good treatment a full priced match ball will outlast half a dozen of the cheaper sort, and what is more to the point will be much better to play with throughout.

As regards wickets, practice wickets need only be stout and strong, but for matches, not only looks should be attended to, but also perfect accuracy of dimensions and workmanship.

Each seperate stump should be rigidly, or as it is now more the fashion of the day to say—righteously straight: of exactly the regulation length, and perfectly free from knots and any kind of flaws.

This latter is a very important item, for any weakness is sure to be found out sooner or later, and a broken stump is not only unpleasant in a match, but entails, in most cases, the purchase of a new set.

The stumps being approved correct in all particulars, attention must be devoted to the bails, that they are of exactly the regulation length and thickness, and that they fit the grooves in the stumps neither too loosely nor too tightly, and that the grooves themselves are neither too deep nor too shallow.

The grove should be of such a depth that exactly half the bail fits into it.

Special care should be taken not to let any portion of the bail project beyond the head of the stump, the difference of even the sixth of an inch may at any moment make all the difference between out and not out, and it should be remembered that losing a wicket thus through negligence is the same in effect as giving the opponents the odds of eleven wickets to ten on the game.

A good set of match wickets ought, if properly treated and cared for, to last many seasons.

A mere abstention from active injury, from leaving them about in the wet, with perhaps a little attention in drying

them when they do chance to get wet, before putting them up, is all the care they require.

In choosing gloves, whatever pattern may be selected, and there are many new ones every season, the main thing to attend to is to get them to FIT.

Nearly any kind of glove will afford the desired protection; if therefore pains be taken that the fit be perfect, and that the glove does not interfere with the grasp and easy handling of the bat, minor details are practically immaterial.

The same rule applies to foot-pads.

Each player must follow his own fancy in the choice between boots or shoes:

I, for my part, prefer to have the free unimpeded use of my ancles, and therefore wear only shoes, while many men require or think they require, external support to the ancles, and consequently wear boots with spring sides, or even, as I have in in some cases known, tight laced boottees.

There is a very mistaken custom, whether invented solely by shoemakers or not, I cannot say, but certainly in general acceptance with them, arranging the spikes, one under the big toe, and two under the ball of the foot; the objections to this arrangement are these:

First, that in running, as all the spring is from the toe, only one spike is available for giving a hold on the ground; secondly, that the spike on the outside sole is of no service whatever in this position; and thirdly, that on hard ground the ball of the foot is found to suffer considerably, even to the extent of being much blistered by the pressure of the spike.

The method of arrangement I have found most effective and most generally useful for all grounds and all weathers, is this: The three spikes are arranged in the form of a triangle, the base toward the heel.

To give a further hold upon the ground, especially at the sides, I have added a double row of steel-headed nails, arranged zig-zag round the toe, and down the inside of the side and heel.

Thus armed, the shoes give a hold upon the ground as near to perfection as possible.

The nailing should not be overdone, a common fault with enthusiastic amateurs, a third of an inch is the minimum of distance that should be allowed between nail and nail, half an inch is not too much.

If the nails be ranged too closely they will be found to have a most uncomfortable tendency to become clogged whenever the ground is the least heavy.

To some I may appear to lay too great stress upon details of dress and equipments, but the experience now of a good many seasons has convinced me that they are of the first importance —a cricketer, however great his natural capabilities, cannot play up to his full strength unless every thing about him is in full keeping.

Every article of his attire and general outfit is an item on one side or the other of the account:

It is either an assistance or a hindrance.

Ill-fitting head gear, a baggy sleeve, a tight boot, may make all the difference between a good or a bad innings, a successful or an unsuccessful turn with the ball, a day's enjoyment or a day's hard labor.

Therefore, I again repeat, see that every thing be all right not necessarily a matter of any particular expense, before you join in any match, and you will add greatly to your enjoyment of it, and in equal measure increase the odds in favor of your success in all points of the game.

SCIENCE OF THE GAME.

BATTING, BOWLING, AND FIELDING.

Of these three it is difficult to say which is the most important.

Ordinary amateur prepossessions would put them much in their alphabetical order, professional ditto would prefer Bowling, but I am strongly inclined to the opinion that Fielding, neglected as it sometimes has been, is the very foundation and backbone of cricket.

Where is the use of fine batting if you have not the skill to prevent your adversaries doing as well or better than yourself; where the use of good bowling, if the batsman can afford to disregard the field?

Nevertheless, though great proficiency in either of these essential points may make an individual cricketer in an eleven, all these *must* be combined as the condition of its very existence.

Bowling there must be, batting there must be, but, for all that, fielding is the mainstay upon which, unless under very exceptional circumstances, the fortunes of each match must depend.

Granted reasonably accurate bowling on each side, and the eleven good fieldsmen would beat eleven good batsmen nine times out of ten.

As a matter of fact, a man may be a very good bat but a very poor field; whereas a good field is invariably, or almost invariably, a fair bat.

Fielding is in itself good practice for batting or bowling, and above all, fielding at long-stops or the wickets; the player therefore who is bent upon developing his batting, need not think he is wasting time by laying aside his bat and going in for a little work in the field.

A man may very well bat too long at practice, an hour is al-

most too long, but he can hardly field too long; that is, as long as he does not get fagged out.

A long day's leather-hunting is what every man must look for now and then in the season, and it is well, therefore, that a player should inure himself to sustain the consequent fatigue. A player, however fine, who soon knocks up in the field, will quickly find himself more and more dropping out of important matches to make room for younger or more hardy players.

I have often heard it argued thus in choosing a side: 'Smith is by far a better player than Jones—until he knocks up. His batting is first rate, if he goes in early in the day. We have two or three "stickers" against us, and are pretty sure of a good deal of leather-hunting, therefore we will play Jones rather than Smith. Jones is only a medium player, but then he is good to the end, whereas Smith would be worse than useless after the first three or four hours.'

Therefore I strongly advise all would-be cricketers to practice fielding zealously.

As in everything else in this world, proficiency is not to be acquired except by hard work and devoted attention.

What was it that made the public-schools' men of former days such dead hands at fielding?

Was it not the daily fagging out as youngsters in the playing fields to the batting of the big fellows, all the while under the stimulus of the gentle discipline of the middle stump in reserve for inattention and 'muffing.'

By similar hardwork only, voluntary or involuntary, can fielding be restored to its old place in cricket.

A reaction is certainly springing up against that too strict devotion of the gentlemen to Batting, to the neglect of Bowling and Fielding, which has called down so many warnings and expostulations from the best veteran players.

Having said so much in favor of Fielding, let us go into the matter, and see what are the methods by which proficiency may be best obtained.

FIELDING.

The science of fielding naturally resolves itself under two heads.

First, stopping the ball by a catch at the hop or on the ground, and second, by returning it to the wickets.

It might be thought by the uninitiated that the mere return of the ball, after having succeeded in stopping it, is a matter of the simplest kind, and hardly worth speaking of, much less investing with the dignity of a disquisition.

But the real fact is, that a perfect return to the wickets is very rarely attained, even by first class players; presumably, therefore, the art is more difficult to acquire than its necessary preliminary, the mere stopping of the ball.

Certain it is, that with beginners, however apt, correctness and quickness of return is invariably the last thing they ever master.

But more of this in its proper place.

STOPPING THE BALL.

In doing this, as in everything else, there is a right way and a wrong way.

The beginner should take care to find out which is the right way, and should then carefully practice that and none other.

Every time he stops the ball, he is either forming a good habit or a bad one.

Of course this is true in other things besides cricket; but it is of more importance in cricket than elsewhere, because the cricketer is almost entirely a creature of habit.

He has no time, when the moment for action arrives, to consider how he shall play; so short is the space allowed him, in general, in which to act, whether in the field or at the wickets, that a habit of instant, unhesitating adaptation of his play to the ball is his only chance.

A good habit, therefore, a correct attitude, taking the word in its fullest sense, as signifying the arrangement of every fin-

ger, of every muscle in the body, is of primary, vital importance to every would-be cricketer.

There is a very common saying about 'attitude being everything'—but the saying is perfectly true for all that.

Be it remembered though, that there is a vast difference between assuming at all times a correct attitude, and that detestable abomination in a cricketer—attitudinizing: the one is indispensable, the other to be shunned like the plague.

Since attitude, therefore, is of so much importance, let us try to see, so far as mere verbal description may serve us, what is correct attitude.

Every ball *ought* to be stopped by the hand or hands, the position of the hands, therefore, is the first thing to be considered. In stopping the ball the player has two things to consider, first to stop the ball, secondly to do so at the least possible inconvenience to himself.

Some might think that this arrangement might be reversed, and personal immunity made the first object; but this is not the principle of a true cricketer.

First, then, to stop a ball in the air, or in other words, to catch it.

It matters not whether the ball comes fast or slow, the method of receiving it is the same, and is this: the hands must be held with the fingers well spread out and slightly curved inwards, like so many hooks or claws; the thumb must be stretched well back, also slightly curved, and the palm must be made to assume a slightly cup-like form; the result of this arrangement is that the impact of the ball almost closes the hand by its mere actions on the tendons, the palm is driven backwards, and the fingers close almost involuntarily upon the ball.

To avoid very unpleasant consequences to the fingers, such as broken bones or dislocated joints, the hands should never be held with the line of the fingers, reckoning from the wrist to the tips, pointing in the direction of the course of the ball—this line should always be at right angles to its course. That is, if the ball be well in a line with the body and above the chest, the fingers should point upwards; if much below the

chest, they must point downwards; if the ball pass much to either side, the line of the hand must be across its course. In a falling ball the palms must be upwards, for a rising ball downwards.

Of course the position of the palm and fingers above mentioned must be preserved.

In using both hands, for a low ball the fingers must be brought together (both palms to the front), and slightly interlaced; for a high ball the thumbs must be brought together in like manner.

Further, to save the hands and wrists from unnecessary jars, the hands should be always held in such a way, that either by the flexion of the elbows, or the yielding of the hands, the ball may be received as upon a spring, and not upon an unyielding body.

In taking a ball directly in his front, the player must take care that his hands are not driven in upon his body, by an unexpectedly sharp ball; if the part with which his hand comes in contact be hard, woe to his hands; if soft, woe to that part. I have seen men receive very unpleasant 'facers' from their own knuckles in this way, either from carelessness or awkwardness, or both.

To acquire this art of stopping the ball correctly, it is well to begin with catching it from gentle tosses at short distances, gradually increasing both the distance and the speed of the ball, being careful the while, at each attempt to note whether the position of the hands was in rule, and endeavoring to correct the defects as they show themselves.

The same practice should be tried with a rolling ball, and then a bounding ball.

A fair proficiency having been acquired in these initiatory practices, the tyro may proceed to the more ambitious points in fielding.

But first he must learn to stop the ball, both on the ground and in the air, with right or left hand alone, and must not rest satisfied until he can thus use either hand equally well.

With most men the left hand is weaker and less under control than the right, and should therefore be more exercised.

It will be found a useful plan to practice principally the weaker hand, paying little attention to the stronger, which is sure to take care of itself.

In order to learn the more brilliant points in fielding, the learner should first get a friend to throw the ball to him to field, from all distances in all sorts of ways, and with varying speed and delivery, until every ball that comes within reach is stopped with absolute certainty.

I have found it a very useful practice in training elevens of boys, to take some three or four out in the field, set up one stump, and then standing there as wicket keeper, throw the ball to one or another, stationed at various distances around, and require quick handling and a sharp return.

When the art of stopping a ball thrown from the hand has been fully mastered, the next step is to practice to balls sent from the bat.

This is not such a matter of course as might appear.

I have known many a player who was 'death' on a throw, by no means too safe in real fielding to the bat.

The fact is, there is a very material difference in the way in which a ball comes to the hand, from a throw or from a bat; moreover, the sight of a ball from a bat is not so good as that from a throw.

In a throw, there is first the movement of the arm to guide the eye, and secondly a settled starting point for the ball, *i. e.* the hand; but with the bat, until the ball is actually struck, it is never quite certain what will be its actual course, nor can the precise part of the bat from which the ball will come be confidently predicted.

I would strongly advise, a sedulous devotion to fielding to the bat upon every possible occasion.

A beginner cannot do better than devote himself, when others are practicing bowling and batting, to the somewhat despised—alas, that it should be so—duty of fagging out in the

field; trying his powers at all points; more especially at long stop.

There is no place in the field where more real cricket may be learned and practiced than in this.

Nor should the young player on these occasions rest satisfied with merely fielding the ball more or less creditably; he will find it a useful change from what is otherwise liable to become a somewhat monotonous task, and what is more a most improving practice, to study his weak points, as he fields each ball, and try to overcome them.

For instance, when long-stopping, to stand somewhere about the place of long-slip, and then try to stop the ball, crossing it at right angles, and using only the left hand.

If left-handed, he might stand on the other side, and practice picking up with the right.

In the field too, practice in picking up a ball at half volley, that is, just at its rise from the ground, is most improving.

Almost any ball that pitches reasonably near, and yet short of the fieldsman, *may* be taken this way, and the catcher must force himself to take all he can thus, as he will see that a mastery of this, perhaps the most difficult of all points, will give him a wonderful command over the ball at all other times.

We will suppose that the learner has now mastered thoroughly all the points of near and out fielding, that, so far as stoping the ball is concerned, he is ready to take his place at long-stop, slip, point, or anywhere, without fear of letting anything by him.

So far so good.

But let him not fancy that he has mastered the whole art and mystery of fielding.

He has learnt much, but yet only a moiety of the whole, a very important one I grant, but not of any very great value unless backed up by its equally, if not more, important remaining half.

Stopping the ball is all very well, but returning it in true style to the wickets is perhaps better.

Nothing shows a good cricketer so well as clean handling of

the ball (by which I mean receiving it at once into the hand without any fumbling or clutching), and quick, accurate return to the wickets.

I once saw a man run out in an eleven and twenty-two match, by a splendid specimen of quick, neat fielding.

The batsman, one of the best in the twenty-two, young and active, hit a ball hard to cover point, and started to run, only one pace.

With an ordinary field he would have made his one, and perhaps two runs, but Hayward was there, and in cricketers' talk, 'got in his way'—he ran forward, scooped up the ball in his left hand, passed it to his right, chest high, and returned it so true and straight to the wickets, that it was only by inquiry that the spectators could decide whether the ball took the bails before or after reaching the wicket-keeper's hands.

As it happened, the wicket was 'all there,' and had the bails down before the too eager batsman could regain his ground.

A better piece of cricket, both in the field and at the wicket I never saw. Indeed, nothing better could be seen—for it was perfection.

I am persuaded that that incident alone cost our side — not counting the probable runs the unlucky batsman might have made, he nearly made his score the second innings, what with ones that might have been twos, and unproductive hits that might have been ones----and so on; at least twenty runs, to say nothing of its influence upon the nerves of the succeeding batsman, certainly not to be braced by the near attentions of such terrible fieldsmen.

Consider, therefore, O, suckling cricketer, that until you can return the ball, upon the instant of handling it, fairly and sharply to the top of the bails, your talents, however great in the stopping line, are nothing worth.

Not only must the ball, to be properly fielded, be handled neatly and returned sharply, it must be met.

The fieldsman must not be content to stand still to let the ball come to him, running only when the ball would pass him on one side or the other; the ball must be met.

A good fieldsman starts instinctively forward to every ball that comes his way.

Not, only, too, must the player run to meet the ball, but he must continue to run until the ball has actually left his hands on the way back to the wickets.

Many players, too many indeed, run until just upon the ball, and then stop to throw it, not recognising the value of the time thus lost.

What with the difference between the place where the ball might have been taken and where it was taken, with the loss of energy of action resulting from the dead stop, the loss of the distance the player would have passed over in the necessary step or two after taking the ball and before returning it, and finally the loss of additional impetus in the return to the wickets, a very tolerable case of woeful loss of time might be made out.

I used to play, a few years ago, with an eleven, wherein was a man in whom this habit was inveterate.

I often joked him, and, also, tried, vainly, to argue him out of it, but to no purpose; he would not even allow that it *was* a fault.

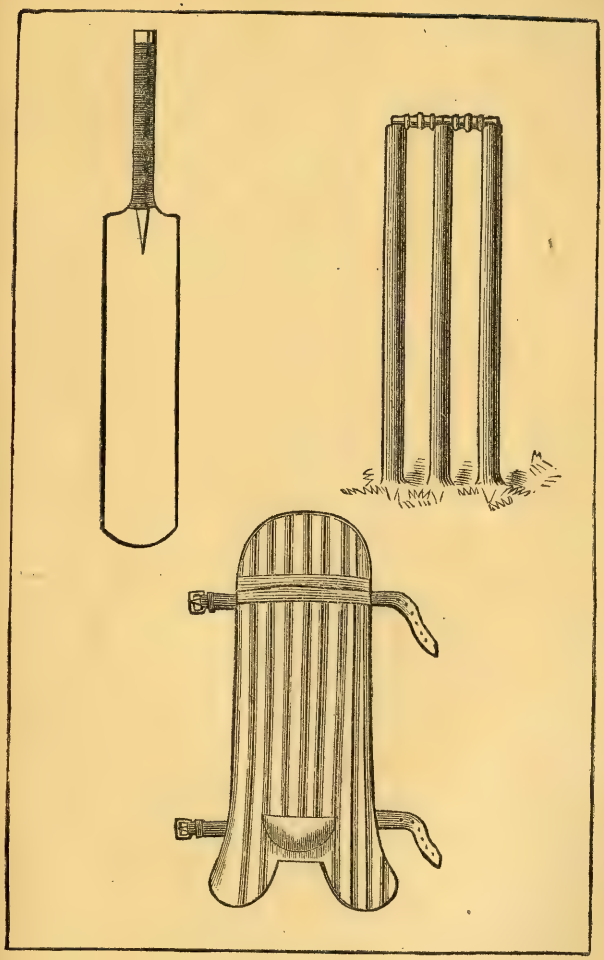
One day, however, we chanced to be playing a home match, and on opposite sides.

When it came to be my turn to go in, I told him as I passed him that I would back myself to get a run every time he had a ball to field.

I had often told him before that it was possible, and he had always said, 'Only let 'em try;' now my theory was to be put to the test.

I saw he was bracing himself up to look extra sharp after the ball, but still I was pretty confident that standing, as he did, at long-field off, he *must* give a chance every ball, unless he ran fairly in.

Very soon I had an opportunity, and sent a ball his way, and following it up, got safely home well before the ball was returned.



My opposite soon followed suit in the same way; and we stole at least half-a-dozen runs, amidst the cheers of our side, and the growlings loud and deep of our opponents, before he would condescend, or, indeed, conquer his old habit of false play to run well into the ball.

He did at last, and then there was such a near shave for the crease, that we judged it best to discontinue our 'little game.' The most extraordinary part of the affair was, that it did NOT cure him, or even bring him to confess his error.

Last time I saw him play, he was playing in exactly the old style, not a movement or an attitude altered.

Of as much importance as quickness of return is the straightness.

A ball well thrown in should come in as nearly a straight line from the fieldman's hands to the bails as possible.

If thrown from a distance, the less the height of its flight the less time will it occupy in transit, and the less chance of runs will there be for the batsman.

A sky-scraping throw is an abomination to a real cricketer.

The great aim of a fieldsman, in returning the ball, should be to bring it to the wicket-keeper's hands as quickly as possible.

That, too, in such a manner, that the least possible movement may be necessary to displace the bails.

NOTE THIS.

One more most important word of advice to the fieldsman, and then we must proceed with the other branches of our subject.

Remember, that as long as the ball is in play, never take your eyes off it, or let your attention wander from it.

Watch it all over the field with the same devoted attention as you might bestow were you in the last stage of love, and the ball were the object of your affection.

This is more important than might be supposed.

In the first place, only so can you guarantee yourself from an awkward blow from a stray ball.

In the second, be always ready for any of those numberless chances that occur in cricket.

The ball has always a shrewd knack of coming in one's direction, exactly when least expected, and least prepared for.

AN INSTANCE

I remember distinctly. I was once fielding for three hours at long-field.

The day being chilly, and my work not being enough to warm me, I thought of donning my jacket.

Being impatient of the cold, and quite unexpectant of having anything to do, I was guilty of the un-cricketer-like act of putting, or rather trying to put, on my jacket in

THE MIDST OF AN OVER

—when I put my left arm through one sleeve, and was just getting the other in, when a puff of wind took it and wrapped it round my arm and shoulder.

At that very moment, as if it had been watching the opportunity, the ball came towards me.

I ran to meet it, and—I

DIDN'T MAKE IT!

Oh, the agony of that moment! The man I did not catch out made fifty-two runs afterwards without giving the slightest chance!

Let this be a warning to the careless and inattentive.

At any moment the whole fortunes of a match may depend upon any one of the individuals playing.

A moment's inattention or hesitation — a single moment's unreadiness—may change the whole fortunes of the day,

STEADINESS—ITS IMPORTANCE.

Last, but by no means least, of the virtues to be cultivated by the Fieldsman, and indeed by cricketers at all points—batting, bowling, or fielding—is steadiness.

By this I mean not only steadiness of conduct, though that is a very needful trait of a cricketer's character, but steadiness of nerve—the steadiness, in short, though in a different degree, of the soldier under fire.

No man who is liable to be flurried and lose his nerve can ever be good for much as a cricketer.

Here lies one great advantage of the Professional players over the Amateurs: the Professionals have no nerves at all to speak of—at least if they have they themselves are quite unconscious of the fact; they look upon the game as a matter of business, and consequently take its many variations with the most perfect nonchalance.

If they are not in luck one day they are pretty sure to be so the next.

A long experience has shown them that matters balance themselves very regularly at the close of the season.

That, taking one match with another, fortune is sure to declare in the main in favor of the better players.

The confidence thus derived from experience and natural constitution gives the Professional player that admirable steadiness and self-command under circumstances of excitement and trial that prove of such incalculable service against the, perhaps, more earnest, but certainly more exciteable Amateur players.

Never, or very rarely, do you see a professional give an overthrow, through wild throwing, in circumstances of excitement. On the contrary, if it be possible to find any fault, the Professionals err on the side of too much coolness and deliberation. In being too confident.

Years and hard work have mostly tamed down the ardor of our leading Professionals before they attain to a leading place among their brethren.

Even the comparative youngsters amongst them are so over done by the almost unbroken succession of matches, in which their presence is indispensable, that, however good their condition may be, they scarcely come on to the ground in their full freshness and vigor.

If, therefore, the Amateurs would only cultivate steadiness as an addition to their undoubtedly superior activity and enthusiasm, they would prove a much harder nut for the Professionals to crack than, as a rule, they contrive to be.

A diagram of a cricket field will be useful in pointing out the various places in the Field of the several Fieldsmen.

These places vary with the style of the bowling.

With fast bowling the main body of Fieldsmen stand behind or near the wickets; with slow, well away from, and in front of the wickets.

A Field of Sixteen gives about all the important places.

The Diagram on the next page must be taken in lieu of verbal description of the Positions of the several Fieldsmen.

DIAGRAM ON OPPOSITE PAGE

EXPLAINED.

[B] Batsman.
[B1] Bowler.
[*a*] Long-stop.
[*b*] Wicket-keeper.
[*c*] Slip.
[*d*] Long-slip.
[*e*] Third man.
[*f*] Point.
[*g*] Cover point.
[*h*] Mid-off.
[*i*] Long-off.
[*j*] Long-on.
[*k*] Mid-on.
[*l*] Short Square-leg.
[*m*] Long Square-leg.
[*n*] Short-leg.
[*o*] Long-leg.

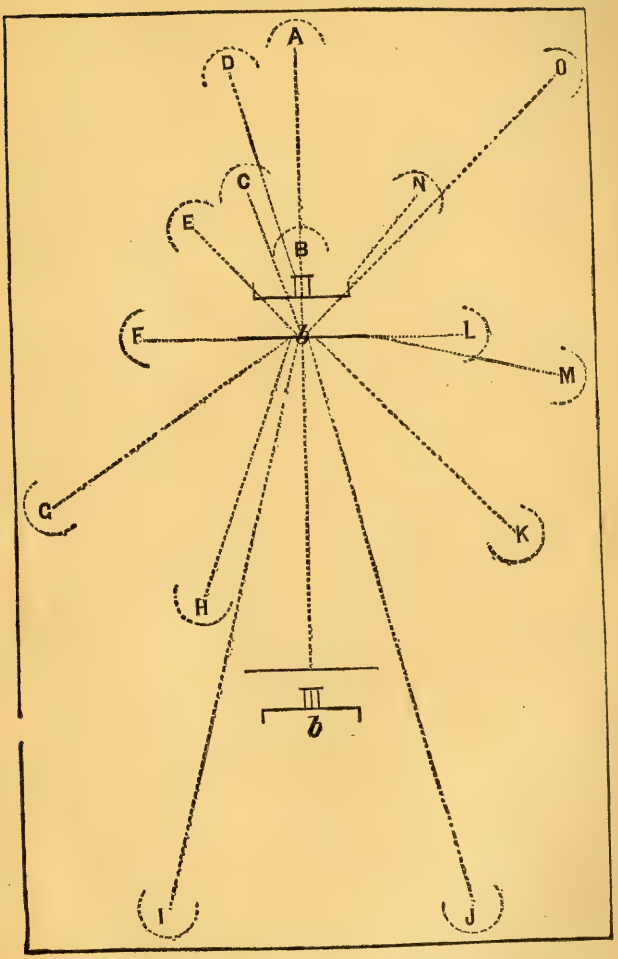


DIAGRAM OF CRICKET FIELD.

BOWLING.

Though placed in point of order second to Fielding, I must be allowed to qualify somewhat the observations before made upon the relative importance of the two.

In giving Fielding the first place, I looke.. at the game as it is, and not as it might be.

Of course if you will get bowlers so accurate that every ball should be

STRAIGHT TO THE WICKET,

and pitched directly in the manner most difficult to play, then the field might become a subordinate part; but even against bowling such as this a batsman with no fear of the field before his eyes might knock up a very pretty score before finally disposed of.

Moreover, very few men can go on bowling their best when chances from the bat are not taken, or when runs are thrown away through bad fielding.

Even the best bowlers must miss the wicket sometimes, and if the wicket-keeper is a muff, and long-stop incompetent, the runs from byes quickly assume formidable dimensions.

I remember once playing a match in which our opponents played one of the crack amateur bowlers of the day.

The ground was a little rough, and his bowling was swift—a good deal swifter in fact, than they were quite up to.

In consequence, every ball that passed the wicket was almost invariably a safe 'one,' and sometimes when the second long-stop—for they had two on—let the ball by, 'twos' and 'threes' were made.

The slips, too, found it very difficult to hold the ball coming at such an unwonted pace; and runs in those parts also were very numerous.

Finally, this bowler, who was to strike terror into our hearts, and play havoc with our wickets, was obliged to go off, through no fault of his, but simply because the field could not play up to his bowling.

He took five or six wickets in comparatively a few overs;—but the run-getting was so fast that they almost all fell for actually more than they were worth against far inferior bowling.

This and similar experiences make me place fielding certainly on a par with bowling, if not absolutely above it.

The bowling of the present day is of two kinds—

ROUND ARM AND UNDERHAND.

Of these two, the first is the only form tolerated by young players, and even by many of more experience, who ought to know better.

Doubtless, round-arm bowling, like that of a few of the leading 'cracks,' is ahead of underhand, but these are exceptional cases;

MEN WITH SPECIAL GIFTS;

And even with them the art was not acquired nor kept up without an amount of patient practice, for which few can or ought to spare the time.

The case stands thus: round-arm bowling is chiefly valuable for the increased power over the velocity of the ball, but this increase of power is only gained by delivering the ball from an unnatural position, and with an unnatural action—an action and position, in fact,

PURELY ARTIFICIAL

from beginning to end; and in consequence, except in extraordinary cases, as above noticed, as much or more is lost by way of accuracy as is gained in velocity.

Underhand bowling, on the contrary, requires no extraordinary exertions of the muscles, no swing of the body, the arm

being allowed to swing in its natural line of motion, as a pendulum, and yet it allows of great precision, gives room for the development of bias in the ball, far more destructive than mere speed, is not incompatible with a very considerable degree of swiftness; and finally, but not least, is not by many degrees so fatiguing as round-arm delivery.

Should round-arm bowling then; be laid on one side in favor of the underhand?

Certainly not; if a young player has the talent and takes to round arm naturally, finds it not too fatiguing, and feels it an actual muscular pleasure to bowl in this way, he would only be thrown away as an underhand bowler.

But let each follow his own bent—his physical bent, I mean; and let there be no more forcing of round arm bowling, just because it is 'the thing.'

Men *are* to be found, like Blondin or Leotard, who can perform the most extraordinary feats, and do with apparent ease what the vast majority of ordinary mortals could never do at all.

But we cannot be all Leotards or Blondins.

Ambition is all very well in its way, but we should remember there is such a thing as aspiring too high, and toppling over on the other side.

My advice to the beginner is, to make up his mind quickly as to what style he will adopt.

If round-arm bowling comes naturally and easily to him, and if he has time for the constant practice necessary for him to acquire the art and keep it up, let him not be content with underhand.

But if there be any failure in one of these items he had better abandon the idea of round-hand bowling for once and for ever, and strive to attain what excellence he may in underhand. In the latter style, he *may* do something, even, perhaps, great things, while he is sure to do little or nothing in the former.

We will suppose that round-arm bowling has been found within the compass of the beginner's capabilities: how should he proceed in order to make the most of his powers?

FIG. 5.

FIG. 6.

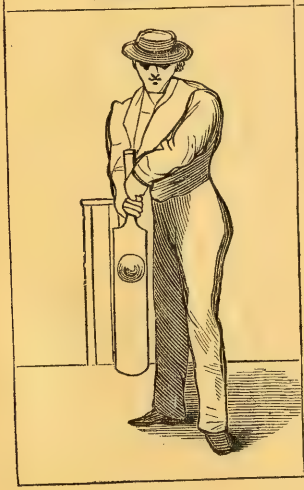


FIG. 7.

FIG. 8.

First, then, to hold the ball.

The ball should be held in the fingers, not the palm of the right hand—if right-handed—the fingers being well wrapped round it—and should be lightly retained in its place by the thumb.

Many bowlers hold the ball in its place with the fingers of the other hand till the ball is swung back for delivery. In delivering the ball, the arm must be swung round in a semi-circle and stretched right out from the shoulder; the nearer the arm is to the horizontal the more bias will there be on the bowling, and the ball must be delivered as the chest and arm come square with the wicket. If the delivery be earlier than this the ball will have a tendency to go wild to leg, and if later to visit the slips.

The body must be held well upright, the chest projected, and great care must be taken to avoid stiffness of action; the play of all the joints should be quite free and unrestrained. It is well to acquire a fixed habit of delivery, to accustom oneself to a certain unvarying regularity as of a machine.

The slight variation necessary to change the pitch, &c., of the ball will in a very short time become a mere matter of volition. Even the number of steps in advancing to the wicket should be made a matter of custom to be rigidly adhered to. The ball should not be allowed to leave the fingers all at once like a stone from a sling, *i. e.* with no motion but a forward one, a ball thus delivered is a very simple and easy one for a batsman to deal with. The fingers must be unwrapped from the ball, as it were, singly, and its final impulse should come from their tips; this will impart to it that rotation on its axis or bias, in which lies all the life of good bowling.

A ball thus rotating will not rise from the ground after the pitch at the same angle, and in the same line of direction as before, it will take a new course altogether, more or less erratic according as its rotation was more or less rapid.

Exactly, after the manner, in fact, and upon precisely the same principle as a billiard ball with the 'screw' on it, or a bowl with a bias.

through the water. There is no direct action at all, no scooping of the water with the fore-paws, which are kept pressed closely against the sides. But the two hinder paws are pressed tightly together, and moved backwards and forwards with a steady sweep, this alternate action giving precisely the same sort of wedge, or inclined plane, that is formed by the simultaneous action of a man's legs while swimming on his back.

Man, however, when he can swim well, exhibits this principle very clearly. When a good swimmer is lying on his back and propelling himself as fast as he can, he always gives a kind of half turn to the body, so as to obtain a screw like action of the legs, thus increasing his speed without increasing the force of his stroke.

Steering the course is easily managed by means of the legs. If the left leg is allowed to remain still, and the right leg is used, the body is driven to the left, and *vice versa* when the left leg is used and the right kept quiet. The young swimmer must remember that when he brings his legs together they must be kept quite straight and the knees still. The toes should also be pointed, so as to offer no resistance whatever to the water.

Swimming on the back is a most useful branch of the art, as it requires comparatively little exertion, and serves to rest the arms when they are tired with the ordinary mode of swimming. All swimmers who have to traverse a considerable distance always turn occasionally on the back. They even in this position allow the arms to lie by the sides until they are completely rested, while at the same time the body is gently sent through the water by the legs.

Let swimming on the back be perfectly learned, and practiced continually, so that the young swimmer may always feel secure of himself when he is in that position.

The feet should be kept about twelve or fourteen inches below the surface of the water, as, if they are kept too high, the stroke is apt to drive the upper part of the head and eyes under the water.

It must always be remarked that it is impossible to arch-

Then, the plainest bowling becomes dangerous, and deadly to all, but the most rigidly exact defence.

A LIVELY BIAS

superadded, backed by sufficient judgment to direct it, and the finest batting in the world will make but little head against it.

The exact spot upon which to pitch the ball varies very much with the speed of the bowling.

The faster the bowling, the shorter must be the pitch, and *vice versa*.

FROM MEDIUM PACE BOWLING,

and to a batsman of ordinary stature, the pitch may be from ten to eleven feet in front of the wicket.

In mere practice it is a good plan to fasten a piece of white paper, or put a dab of whitewash, to

MARK THE EXACT SPOT,

and the bowler should then endeavor to pitch every ball as nearly upon it as possible.

A few half hours of sedulous practice in this way will, if the bowler has it in him, produce results that will surprise even himself.

But he must not be satisfied with an occasional drop upon the spot.

At least three balls out of every four should be within an inch or so of it—an amateur must not hope to attain perfect accuracy before he rests content.

And even then his 'rest and be thankful' should be only a rest preparatory to further and more sustained efforts.

I am thus particular upon this point because accuracy in it is the one essential without which all other qualities, are simply thrown away.

And, moreover, it is only when a bowler has mastered all the mere mechanical details, that he can begin

TO USE HIS HEAD

in bowling.

Then he can venture to try various lengths and curves upon the batsman ; for it is no use discovering a weak point if there is not mechanical skill and precision enough to take advantage of it.

As I said before, for every batsman there is a special point on or about which the ball ought to pitch, so as to prove most troublesome to the batsman.

A ball pitched exactly upon this spot is called a 'length-ball'—all others are non-lengths.

If they fall nearer the batsman they are said to be over-pitched, if further away they are called short-pitches, or long-hops.

A ball that does not rise after it takes the ground but runs along it, is called a 'shooter,' and is one of the most difficult possible to play.

LENGTH BALLS

are thus the perfection of bowling, and it must be the bowler's first object to find out the exact length most puzzling to each individual batsman.

Only he should remember this, that the nearer he can pitch to the bat without being hit away, the more difficult will his bowling prove.

First class men, in the past generation, like

LILLIEWHITE, CLARKE,

and their compeers, and a few in the present, will advance the pitch of the ball, inch by inch, to the extreme verge of safety, and having discovered the raw, coolly peg away at it until the batsman makes a mistake, which, as Artemus Ward says, must be eventually if not sooner, and then there is trouble among the wickets.

The rationale of this is, that with good bowling the ball can only be judged from the pitch ; the least bias making its rise and subsequent flight out of all calculation.

The first pitch of the ball, therefore, only indicates the point of departure of the ball in its second and more important flight.

With downright fast bowling all the resources of the bowler are, by the very nature of things, confined to variation of time and pitch, both very useful in misleading a batsman, but still, against a good defence, not by any means so destructive as the more delicate weapons of finese in the power of the bowler of more moderate type.

The swift bowler, in fact, trusts for success mostly to his mere swiftness, while the medium and slow bowler trusts to head work and delicate manipulation of the ball.

The one is pure brute force, very telling in the hand of peculiarly gifted men, especially on rough ground, while the other may be called

THE CHESS OF CRICKET.

Fast Bowling, moreover, has one failing which is, in my opinion, except in cases like those above mentioned, a very great objection to it, unless it is very good it loses more in runs than it gains in wickets, however good may be the fielding.

The cause of this is, that the bowler is dependant upon the wicket-keeper and long-stop to save byes, a work of unparalleled difficulty with fast bowling, unless the ground be of the truest and the bowling of the straightest.

All these considerations lead me to advise the amateur not to attempt any

GREAT PACE,

unless it comes naturally, but to rest content with a medium and more manageable pace.

There is a style of bowling coming very much into favor of late years, about which I must say a few words. I mean

SLOWS—

though why called *slows* I cannot quite understand.

Some men undoubtedly do bowl most unmitigated slows; but the great masters of the art certainly do not bowl slow.

It is a great puzzle to many people how bowling of this simple (looking) kind can prove so exceedingly formidable to the batsman.

I have heard it seriously maintained even by seasoned cricketers—victims themselves more than once to these 'deadly slows'—that the whole danger of them lies in the over-confidence bred in the batsman by their simplicity.

Being a bowler of this type myself, I have had to bear much contumely and neglect, to listen to numberless lectures, even from men whose wickets have paid penalty to my bowling, that is not cricket, and only fit for 'duffers. However, the fair conviction is gradually forcing its way that fair underhand bowling is better and more cricketer-like than poor round-arm; the only thing tolerated a few years back. And more and more every season is there to be found fast bowling at one end of the wickets, and slow at the other. The once-condemned art is now an object of envy to its possessor, and those who once despised it come to learn its elementary principles.

Since 'slows' are thus rising into importance, let us inquire into the art and philosophy of them. I must request my readers to remember, that in cricket, as in war, time is everything. All that a batsman wants is time to judge the ball; grant that, and the variest duffer in creation could keep his wickets up for ever.

But what the batsman wants is exactly what the bowler must not give him.

The bowler's first object, therefore, after securing tolerable accuracy of direction, is to give the batsman as

LITTLE TIME AS POSSIBLE

in which to make up his mind; and he attains it in one of three ways:

Either by absolute pace of bowling, or by medium pace combined with fair bias, or, finally, by bias, variation of pitch, and curves of ball, with somewhat slackened speed.

Granting equal proficiency in the bowling, and the result is much the same.

But there is this to be remembered, that the fast and medium pace round-arm is altogether an artificial production, depending entirely upon an unnatural use of the

muscles of the arm and shoulder, capable of being brought to perfection but by few.

The percentage decreasing rapidly as the pace is increasing.

Not that the slower bowling is easy or of simple acquirement.

It requires more head work and far grerter accuracy than the other two, but then it does not require such unremitting practice to keep it up, nor is it so fatiguing as they are; it is therefore the style most fitted for the amateur.

It will be remembered that I observed above that the batsman could only safely judge the ball, so as finally to judge how to play it

AFTER THE PITCH.

This is generally true, but at the same time only partially so of very fast bowling.

In very fast bowling the ball moves only (so far as the batsman is concerned) in straight lines, straight from the bowler's hand to the pitch, and straight from the pitch to the wicket; it rises, too, very nearly at the same angle that it takes the ground, and is therein of course more easy to be judged than if there were any variation: and thus the batsman knows all about the ball

BARRING ACCIDENTS,

almost as soon as it leaves the bowler's hand.

Further, a swift ball must, of necessity, be pitched shorter and therefore farther from the batsman, than a slow ball. This of course, gives the batsman a longer sight of the ball, so that even in this, matters are pretty well equalized between the two extremes of bowling.

A swift ball pitches shorter, but comes in quicker ; a slow ball pitches farther, but takes a longer time getting over the same distance.

But the real power of slow bowling lies, first, in the extraordinary bias or "screw" that can be imparted to the ball, or rather to the extraordinary effect the imparted bias is able to produce, partly from having a longer time to bite on the turf, and partly from its almost vertical fall to the

ground which gives a better hold than the mere glance on and off of the swift bowling.

Secondly, in the facility the bowler possesses of concealing any change of pitch from the batsman by the simple expedient of bowling a little higher if he means to pitch short, or a little lower if he means to pitch up.

To the spectator at the side this *ruse* will be at once detected—but the batsman, it must be remembered, sees the ball end on, and therefore has scarcely any data to guide him except the height of the ball in its first flight.

If this, therefore, be varied in inverse order to what would be the ordinary rule, it is not remarkable that he should be sometimes at fault.

Thirdly, slow bowling making no extra demand upon the muscles, enables the bowler to pay more attention to accuracy of pitch ; and pitch, as I have said above, is everything.

The bowler that can bowl most length balls—straightness being understood—is the best bowler in the end whatever his pace.

And, finally, the batsman has to deal with curves instead of straight lines, and, what is more, if the bowler knows his business, with curved lines in endless variety.

This, then, is the stronghold of the slow bowler.

He can puzzle the batsman by varying curves and delivery, as to the exact spot on which each ball will pitch, and by eccentric bias, puzzling him still more afterwards, force him to meet the ball with a straight bat, and play well down every ball that cannot be fairly hit, under the penalty of giving a chance to the field.

A spinning ball has, unless the batsman be very careful, a very uncomfortable habit of running up the bat and flying off at quite an unexpected angle into the ready hands of point or slip, the easiest catch possible—a circumstance, the mortification of which is not decreased by the accident being laid to the account of the bad batting instead of to the credit of the good bowler.

ADVICE TO YOUNG BOWLERS.

Having adopted your style—form it, if possible, upon the model of one of the leading bowlers of the day, fast, medium, or slow, as the case may be—be careful to bowl in as plain a manner as possible.

All mannerisms are either the result of affectation, and consequently simply detestable, or of mere unmeaning habit, and therefore unnecessary—away with them.

Bowl as upright as possible; every inch of height is an advantage, and, moreover, the more upright you stand the better your command over your muscles.

Finally, keep the body as steady as you can, compatibly with free and easy movement of the muscles.

Remember, that in underhand bowling, especially, the shoulder is the fulcrum from which the power is obtained, and if that be unsteady, how can the arm depending therefrom work truly?

A steady arm and hand, a ready wit, and a good eye, not to forget an even temper, with attention and practice are the making of a good bowler.

BATTING.

We now come to that part of cricket which is by many esteemed as the very first and the last.

However much opinions may differ upon this subject, and I have already put in a special demurrer against its claim to the first place in the game, sure it is that without batting, the game would be simply *non est.*

And without scientific batting too tame to be worth playing.

Let us, therefore, consider, in as extended detail as space will admit, the science of batting.

POSITION.

A correct attitude in readiness to receive the ball is of the utmost importance.

In one position, and in one only, can a player have *all* the use of *all* the muscles he will require at the critical moment.

Batting, it must be remembered, is a succession of sudden starts into activity, with intervals of rest, and not one prolonged effort.

The body must, therefore, be so poised and situate in the attitude of quiescent expectation that the requisite muscles may be ready to come into play in the quickest and most effective manner, and this can be effected only

BY ASSUMING ONE POSITION.

fixed and invariable in each individual.

To take up this position, which, however it may vary in minor matters, is substantially identical with all good players, the beginner may proceed thus:

Supposing a line to be drawn from the middle stump of the batsman's wicket to the point at which the ball leaves the bowler's hand, this will cross the popping crease nearly at right angles; this point of intersection is called

THE GUARD,

and may be marked by the batsman in any way he likes best [a scratch with a spike or one of the bails is as useful a way as any].

A moment's consideration will show that the bat, grounded and held upright at this spot [often, by-the-way, called the block-hole] will effectually obstruct the passage of any ball from the bowler to the wicket.

This gives the batsman a fixed point from which to judge the more or less accuracy of flight of the ball, and at the same time affords an invaluable guide to the correct position of the bat in defending the wicket.

The guard may be taken at any point between the popping crease and the wicket, at the pleasure or convenience of the

player; but the one mentioned is the more adviseable, as it gives the batsman more room for action, and at the same time a greater command over the pitch of the ball.

It is the business of the bowler's umpire to give the correct guard to the batsman.

The guard being taken and marked, the batsman has now to make ready for action.

If a right-handed man, he must stand with his right shoulder toward his own wicket, and his left towards the bowler's, his right foot parallel with and just inside the popping crease, and the toe about two or perhaps three inches from the guard, and the left foot somewhat advanced and pointed forwards.

The bat must be held with the face towards the bowler; the point touching the guard, and the handle slightly inclined forwards.

The right hand grasps the handle of the bat a few inches from the shoulder and in the rear, the left holds the handle a trifle higher up, but from the front; the hands being thus on opposite sides of the handle.

This is the 'position;' now for the 'attitude.

For this the player has only

THREE SIMPLE RULES

to remember:

To stand as upright and as easily as possible, to balance the body on the right leg, leaving the left free for any movement, and to turn the face easily and naturally towards the bowler, watching him over the left shoulder which must be kept well forward, the left elbow well up. [Fig. 1.]

Many good batsmen, indeed most of our very best; having 'taken guard' in the manner described, rise to their full height —holding the bat still in the line of the wickets—but swinging a few inches clear of the ground.

This attitude, though apparently less cautious than the former, is in reality, in the case of an experienced player, far more effective even for defence, since the increased height of the eye gives a better sight of the ball, and the bat is more

ready for 'bailers,'—balls that rise high to the bails—without losing, in my opinion even gaining, in the power of being down upon 'shooters:'

For, be it remembered, it is far easier to drop the bat than to raise it.

Moreover, the batsman standing upright has his muscular powers more at his disposal than when stooping.

The player is now ready for the bowler to deliver the ball; but something more is necessary before he can defend his wicket or strike with full effect.

The bat is merely hanging from his hands perpendicularly in front of the wicket, in order to put it in a position to block, that is stop the ball, or strike, a further movement is necessary.

As the ball is delivered, the point of the bat should be thrown lightly and smoothly back upon the bails, the right hand to be used as the pivot, and the left being changed from front to rear, until the whole bat lies in the line from the top of the middle stump to the bowler's hand [Fig. 4.]

This position allows the batsman, by the mere dropping of the bat to its previous position. if the ball be straight and difficult, to stop it quite as effectually. as if the bat had never been moved, with this further advantage, that the bat strikes the ball, not the ball the bat—a point always to be gained if possible.

Thus offering the chance of a run, where otherwise the ball might have fallen dead.

And if the ball be hitable, the bat is ready raised for the purpose.

So thus the batsman is enabled to wait till the last moment and hit or block as seems best.

Only let him take this to heart, that if he block, he shall block as late and as hard as possible.

Thus have I often seen even fast shooters turned into capital by a good bat, to the great discomfort of the bowler.

A beginner should practice this action of the bat at every opportunity.

For practice, a stick is quite as serviceable as a bat.

The change of the left hand from front to rear is somewhat difficult to acquire at first; but may be very soon picked up by constant practice.

FORWARD PLAY.

The ball once delivered, the batsman has to make up his mind how to stop it.

We are only offering Defence, at present; Hitting will come after.

A straight length-ball may be either played forward or back.

That is, the batsman may either reach forward so as to catch the ball at or soon after the pitch, or draw back to get a longer sight of the ball.

All balls 'may' be played back, but many are better stopped by forward play.

TO PLAY FORWARD,

the player must step out with his left foot, keeping the right, or pivot foot, fast inside the popping crease, and must reach forward as far as possible without overbalancing, the bat thrust forward to the full extent of the arms, and inclined well towards the bowler, the left shoulder well forward, and the left elbow well up.

[See Fig. 6.]

This movement must be so timed as to meet the ball just at the rise, not too soon, or the ball may deviate slightly, and take the wickets, or give a catch off the edge of the bat, or at

best meet dead wood, and fall lifeless, and not too late for very obvious reasons. The bat should be clutched tight, and be brought forcibly upon the ball, driving it well back to, or perhaps past the bowler, in which latter case a run is nearly always made.

BACK PLAY.

When the ball pitches too short to be met forward, but too far for a long hop, it should be met by back play.

[Fig. 7.]

The left foot stands fast, and the right steps back towards the wicket; if the ball comes high, the bat is brought close to the wicket, and hangs perpendicularly (or lightly inclined forward) from the wrist.

If the ball comes in a 'shooter,' the point of the bat is dropped sharply upon it, the harder the better, just before it reaches the wicket.

This play against very fast bowling is perhaps safer than the former, for the ball, if it glances from the bat to either side of the wicket, is pretty safe to make runs in consequence of its own velocity.

But with medium pace and slow bowling, this advantage is wanting, and forward play, therefore, is more serviceable.

Fast bowling, too, does not twist as much as the slower varieties, and it is not, therefore, of as much consequence to kill it at the pitch.

HITTING.

Hitherto we have talked only of defence; we now come to the real purpose and end of the batting—run-getting.

The score is the real criterion of a batsman, and if he be not competent to make runs, however difficult it may be to get his wicket, I must at once pronounce him no cricketer—mere poking around the block-hole is not cricket—it is a mere waste of time.

Defence is the first consideration of a batsman, but it is so only that he may get opportunities for hitting.

The first point in hitting is to insure the flight of the ball from that part of the bat which will propel it farthest. This is called 'the drive,' and lies about five inches from the point of the bat, varying slightly according to the weight and make of each bat, but very easily discoverable by experiment.

The next thing is to time the hit so as to catch the ball just as the bat is moving at its greatest velocity. and this can only be done by hitting as late as possible, not with a heavy dead swing of the bat, like the sway of a sack. but with a sharp rapid action, as though wielding a switch.

In striking a ball as it passes, *i. e.*, from an erect position, the whole power of the hit comes from the swing of the bat; but in forward hitting from the position of forward play, the main power is derived from a sudden thrust of the right arm and shoulder, meeting the ball just as in shoulder-hitting, in boxing.

The most forcible shoulder-hitters rise slightly upon the toes to gain more height, and then drop forward from the vantage ground thus formed with all the force and impetus of their body to back up the mere muscular action of their arms.

Hitting may be roughly divided under two heads, ground-hitting and sky-hitting.

The latter, especially from a half-volley, that is a ball picked up just as it rises from the ground, is the most alluring to batsmen, and most appreciated by the unscientific spectators; but a low skimming hit, the ball flying about three or four inches from the ground, is the safest, as not being liable to be caught, the most difficult to stop, and the most telling on the score.

An habitual sky-hitter is a man of short scores.

Bad fielding and bowling may, if he have a good eye, give him an occasional run of luck, but with real players his run of life—in the cricket sense—will be very short. I should strongly advise the beginner sternly to deny himself during practice hours the indubitable pleasure of high hitting.

A habit formed at practice is very apt to lead one astray in a match, and one mistake may be fatal; high hitting, too, requires no practice: if a man can make the other hits he wants no tuition to enable him to punish an occasional loose ball by lifting it over the heads of the outfielders. Space forbids my following in detail 'the various hits upon the ball.' The following diagram will show the position and name of each hit, and I must content myself with very slender directions for their due acquirement

SLIP

is made by allowing a ball on, or a little wide of, the off stump to glance from the edge of the bat, care being taken, in this hit and in all others, to keep the ball *down*, or 'caught out' will be the result. If the ball be two or three inches wide, and near the ground, it may be sent with considerable velocity between the lines marked for the slip and the cut, by dropping the bat on it sharply just as it is passing the wicket, the later the better. This is done by a sharp, quick action of the wrist, and a down drop of the shoulders. It is technically termed 'snicking,' which word I must use for want of a better.

THE CUT

proper is made by hitting a high rising ball with a horizontal bat, just as it reaches the wicket. Fig. No. 3 will show the attitude and manner. Another form of the cut is made off a lower ball, and with an upright bat—it is not so brilliant a hit as the cut proper, nor so effective, but it is far safer, the attitude in the cut proper making it quite impossible to stop a shorter or keep out a breaking ball—*i. e.*, one that pitches wide of the off-stump and turns into the wicket. The other hits, until we come to square-leg, are not so peculiar as to require a special description.

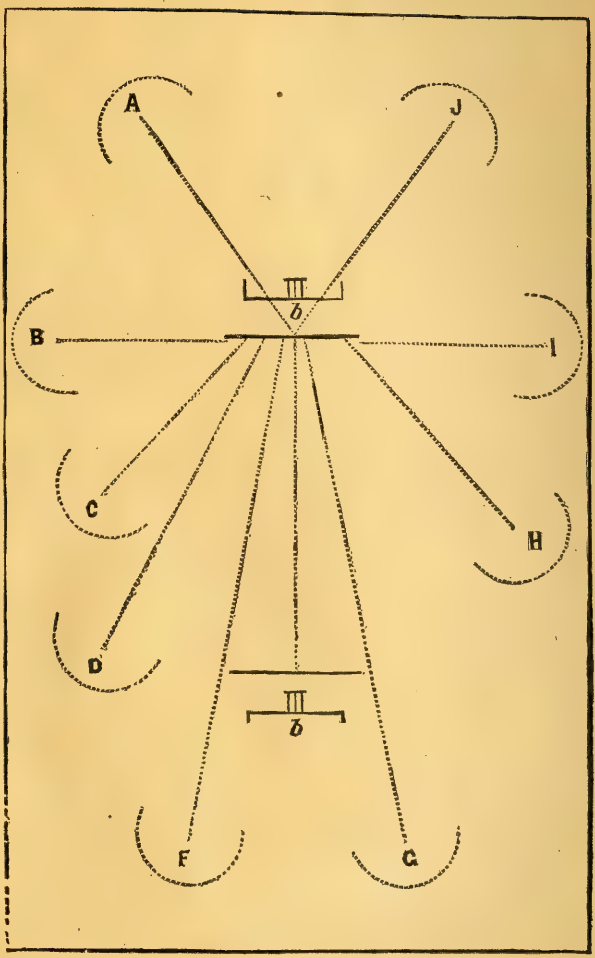

A
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DIAGRAM ON PRECEDING PAGE

EXPLAINED.

a. Slip.
b. Cut.
c. Cover-hit.
d. Harrow-drive.
f. Long-off.
g. Long-on.
h. Mid-on.
i. Square-leg.
j. Leg.

SQUARE LEG

may be made either by playing forward as before directed, upon a ball slightly wide of the leg-stump, which will then fly off square to leg, or by the Cambridge poke, for which see Fig. 8, which is very useful for a high rising ball on the leg-stump.

DRAW.

By which a ball is allowed to glance off the bat to leg, is useful with balls like the preceding, but difficult to meet forward. The attitude is the same as in back play [Fig. 7.]

LEG HIT.

Very useful against loose bowling. It is best made by stepping slightly forward with the left foot to an over-pitched leg-ball and hitting square to leg; the combination of the two forces, the original impetus of the ball, and the fresh impetus imparted by the bat, will carry it in the direction of leg. A hit is sometimes made by reaching forward to a short-pitched ball, and swiping across, the bat pointed to the pitch. This is all very well, if successful, but the least deviation of the ball may either take it past the bat, or more disastrous still, send it skying into the air off the edge; it is, therefore, not to be commended to the novice. There is a further modification of the leg hit, occasionally of some service. The left foot is made to describe a semicircle round and in the rear of the right, and

the body is faced round nearly to square-leg [See Fig. 5]. This hit is employed by a few to pick up leg-shooters—it enables the batsman to hit them along the ground to leg with considerable force. The hit must be as late as possible to be effective.

Here I must take leave of my subject, commending it to my readers as one that will well repay any painstaking in studying its intricacies, which are in truth more apparent than real: and with the advice to give all their energies to the game whilst actually engaged in it—for thus only will they attain to any real practical skill—I wish them all success in all departments of this noble art of cricket.

THE END.